



555

**AUTO - INDEX
SPIN / RELIEF
REEL GRINDER**

Patent No. 5,321,912
6,010,394 & 6,290,581

**ASSEMBLY
and
SERVICE
MANUAL**



WARNING

You must thoroughly read and understand this manual before operating the equipment, paying particular attention to the Warning & Safety instructions.

SAFETY INSTRUCTIONS



Safety Awareness Symbols are inserted into this manual to alert you to possible **Safety Hazards**. Whenever you see these symbols, follow their instructions.



The **Warning Symbol** identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The **Caution Symbol** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE WRENCHES AND OTHER TOOLS.**
3. **KEEP WORK AREA CLEAN.**
4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use Grinder in damp or wet locations. Machine is for indoor use only. Keep work area well lit.
5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.
6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.
7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.
8. **USE THE RIGHT TOOL.** Don't force the grinder or an attachment to do a job for which it was not designed.
9. **WEAR PROPER APPAREL.** Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
10. **ALWAYS USE SAFETY GLASSES.**
11. **SECURE YOUR WORK.** Make certain that the cutting unit is securely fastened with the clamps provided before operating.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in Service Manual for lubrication and preventive maintenance.
14. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.
15. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure all switches is **OFF** before plugging in the grinder.
16. **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.
17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.
18. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.
19. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in Service Manual for the proper location and part numbers of safety decals.
20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

SAFETY INSTRUCTIONS



IMPROPER USE OF GRINDING WHEEL MAY CAUSE
BREAKAGE AND SERIOUS INJURY.



Grinding is a safe operation if the few basic rules listed below are followed. These rules are based on material contained in the ANSI B7.1 Safety Code for "Use, Care and Protection of Abrasive Wheels". For your safety, we suggest you benefit from the experience of others and follow these rules.

DO

1. **DO** always **HANDLE AND STORE** wheels in a careful manner.
2. **DO VISUALLY INSPECT** all wheels before mounting for possible damage.
3. **DO CHECK MACHINE SPEED** against the established maximum safe operating speed marked on wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** when supplied with wheels.
6. **DO** be sure **WORK REST** is properly adjusted.
7. **DO** always **USE A SAFETY GUARD COVERING** at least one-half of the grinding wheel.
8. **DO** allow **NEWLY MOUNTED WHEELS** to run at operating speed, with guard in place, for at least one minute before grinding.
9. **DO** always **WEAR SAFETY GLASSES** or some type of eye protection when grinding.

DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole--if wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF BURRS**.
5. **DON'T TIGHTEN** the mounting nut **EXCESSIVELY**.
6. **DON'T** grind on the **SIDE OF THE WHEEL** (see Safety Code B7.2 for exception).
7. **DON'T** start the machine until the **WHEEL GUARD IS IN PLACE**.
8. **DON'T JAM** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or work gets hot.



AVOID INHALATION OF DUST generated by grinding and cutting operations. Exposure to dust may cause respiratory ailments. Use approved NIOSH or MSHA respirators, safety glasses or face shields, and protective clothing. Provide adequate ventilation to eliminate dust, or to maintain dust level below the Threshold Limit Value for nuisance dust as classified by OSHA.

TABLE OF CONTENTS



This machine is intended for grinding the reel of reel type mower units ONLY. Any use other than this may cause personal injury and void the warranty.

To assure the quality and safety of your machine and to maintain the warranty, you **MUST** use original equipment manufactures replacement parts and have any repair work done by a qualified professional.

ALL operators of this equipment must be thoroughly trained BEFORE operating the equipment.

Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder. Machine is for indoor use only. Do not use a power washer to clean the machine.



Low Voltage Relay

The grinder is equipped with a low voltage relay which is factory preset at 100 VAC. If the power supply line does not deliver 100 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is inadequate and must be correct before proceeding further with the grinder.

TABLE OF CONTENTS

Safety Instructions	Page 2-5
Daily Maintenance	Page 4
Service Data.....	Page 6
Assembly Instructions	Page 7-12
Maintenance	Page 13-19
Adjustments	Page 20-25
Electrical Troubleshooting	Page 26-41
Mechanical Troubleshooting	Page 42-43
Exploded Views and parts Lists	Page 44-75
Wiring Diagram & Schematic	Page 76-77

DAILY MAINTENANCE BY THE OPERATOR

On a daily basis, clean the machine by wiping it off.

On a daily basis, remove all grinding grit from the grinding shaft, traverse shafts, and tooling bar area.

On a daily basis, inspect the machine for loose fasteners or components.

Contact your company's Maintenance Department if damaged or defective parts are found.



DO NOT USE COMPRESSED AIR TO CLEAN GRINDING DUST FROM GRINDER

SAFETY INSTRUCTIONS



Safety Awareness Symbols are inserted in this manual to alert you to possible Safety Hazards. Whenever you see these symbols, heed their instructions.



The Warning Symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The Caution Symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to, or destruction of equipment.

PLEASE TAKE SPECIAL NOTE OF THE FOLLOWING WARNING DECALS LOCATED ON THE FRONT AND SIDES OF THE GRINDER.



Symbol for hearing protection required when operating this machine.



Symbol that operator and people in close proximity must wear respirators or have an adequate ventilation system.



Symbol for Read operators manual, wear safety glasses and disconnect power before servicing.



Symbol to keep visitors a safe distance away from the grinder.



Symbol for sharp object which will cause serious injury.



Symbol for minimum safe rated RPM of grinding wheel.



Symbol identifying a panel, cover, or area as having live electrical components within.



Symbol to keep exposed gasoline or flammables away from the grinder because it operates with a large amount of sparks.

SERVICE DATA

SKILL AND TRAINING REQUIRED FOR SERVICING

This Service Manual is designed for technicians who have the necessary mechanical and electrical knowledge and skills to reliably test and repair the 555 Spin/Relief Grinder. For those without the background, service can be arranged through your local distributor.

This section presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the operators manual, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove the control box cover or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have questions not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

TORQUE REQUIREMENTS

Throughout this manual we refer to torque requirements as "firmly tighten" or the like. For more specific torque values, refer to the information below.

Bolts Going Into a Nut, or Into a Thread Hole in Steel.

Refer to the table at the right.

Bolts Going Into a Thread Hole In Aluminum

Use the Grade 2 values in the table at the right.

Socket-Head Screws Going Into a Nut or Steel

Use the Grade 8 values in the table at the right.

Machine Screws

No. 6 screws: 11 in.- lbs (0.125kg - m)

No. 8 screws: 20 in. - lbs (0.23 kg - m)

No. 10 screws: 32 in. - lbs (0.37 kg - m)

	GRADE 2  SMOOTH HEAD	GRADE 5  3 MARKS on HEAD	GRADE 8  6 MARKS on HEAD
1/4 In. thread	6 ft-lbs (0.8 kg-m)	9 ft-lbs (1.25 kg-m)	13 ft-lbs (1.8 kg-m)
5/16 In. thread	11 ft-lbs (1.5 kg-m)	18 ft-lbs (2.5 kg-m)	28 ft-lbs (3.9 kg-m)
3/8 In. thread	19 ft-lbs (2.6 kg-m)	31 ft-lbs (4.3 kg-m)	46 ft-lbs (6.4 kg-m)
7/16 In. thread	30 ft-lbs (4.1 kg-m)	50 ft-lbs (6.9 kg-m)	75 ft-lbs (10.4 kg-m)
1/2 In. thread	45 ft-lbs (6.2 kg-m)	75 ft-lbs (10.4 kg-m)	115 ft-lbs (15.9 kg-m)

ASSEMBLY INSTRUCTIONS

Remove the sides, front, and back of the crate. Remove the plastic bag, shrink wrap and bubble wrap. Remove the metal clips that secure the grinder to the crate base. With a fork lift, raise the grinder from the wood base and set it in its final position. See FIG. 22 and 23.



**THE UNIT WEIGHS
1450 LBS. [658 kg]. TO
LIFT, USE POWER
EQUIPMENT.**

Remove shipping straps and window protective sheets.

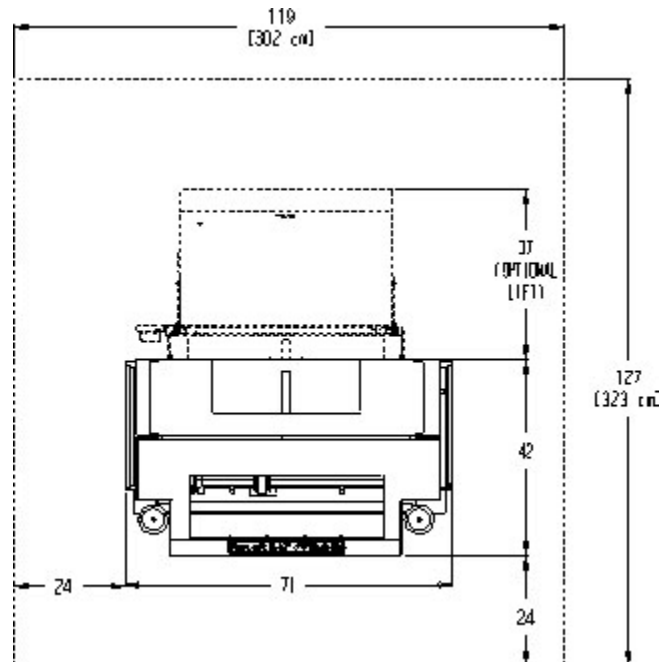


FIG. 22

POSITION BASE

The 555 Spin/Relief Grinder will require an operating area of about 119" W x 127" D x 90" H (302 x 323 x 229 cm). The machine operator will operate the unit from the front of the machine. Position the base to allow sufficient operating room in front and to the rear of the machine. See FIG. 22 and 23.

The base should be placed on a relatively level concrete floor, with ample ceiling height to allow for the installation of the unit. Do not place the unit across two concrete slab seams or across a large crack.

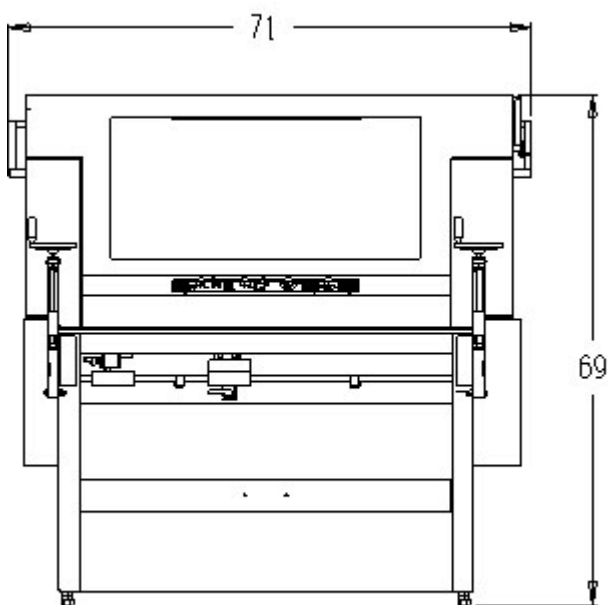
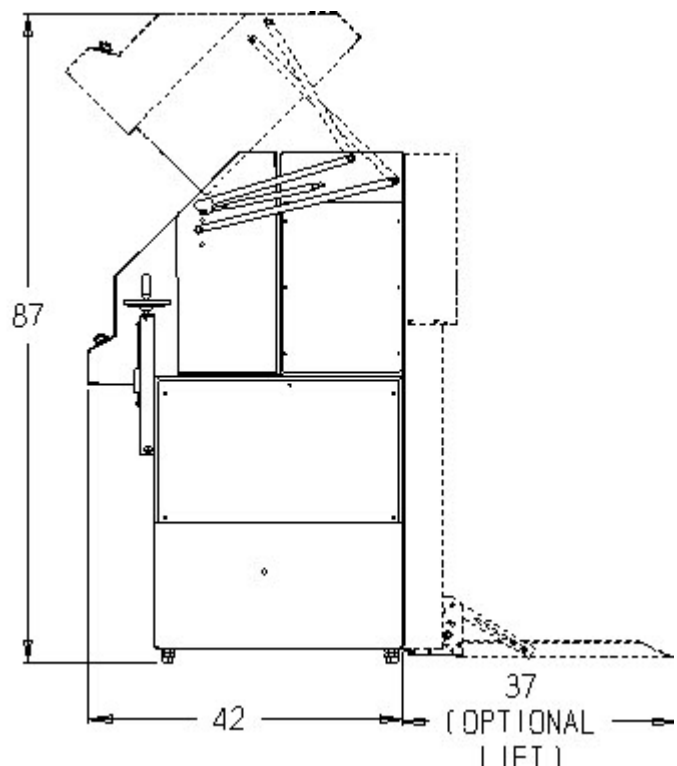
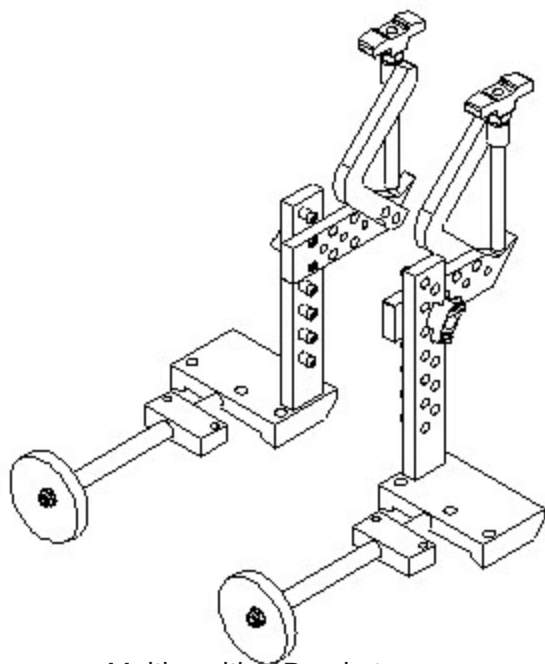


FIG. 23

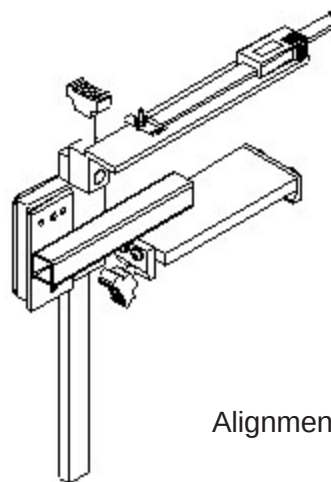


ASSEMBLY INSTRUCTIONS (Continued)

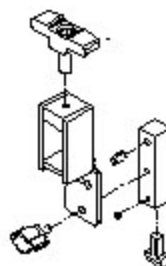
Remove the carton and remove the contents from the carton onto a workbench. The carton includes:



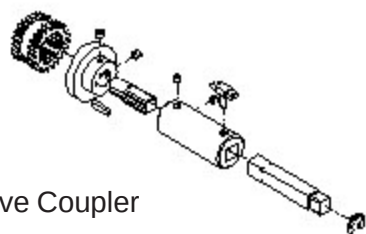
Multi position Brackets



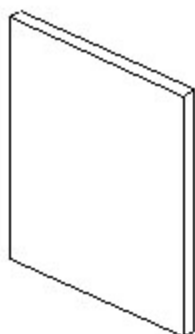
Alignment Gage



Diamond Dresser



Drive Coupler



Product Packet Assembly
(Operators & Assembly
Manuals)



Spanner Wrench

ASSEMBLY INSTRUCTIONS (Continued)

LEVEL BASE

Place level on the top of the table and check the levelness of the unit from side to side. Adjust the leveling feet as necessary to bring to level. See FIG. 25.

Place a level across the table from front to rear. Adjust the leveling feet on the end of the machine as necessary to level. See FIG. 26.

When both front to back and side to side leveling procedures have been completed, thread the hex jam nuts up against the nut that is welded to the bottom until they lock into place. Be careful not to move the leveling feet during this process. See FIG. 24. Make certain that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

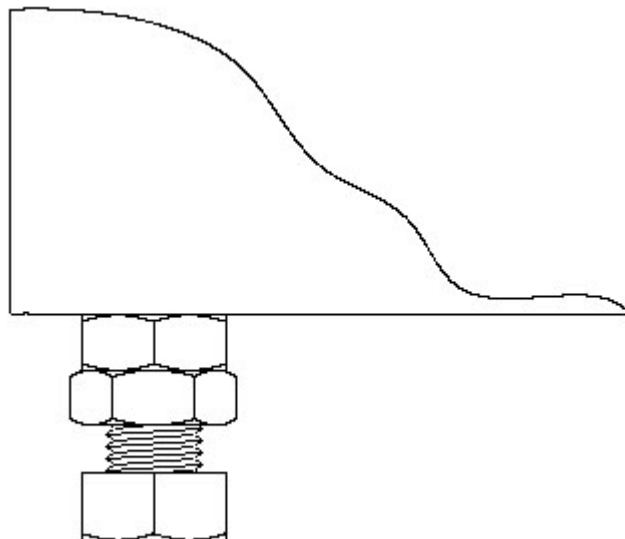


FIG. 25



FIG. 26

ASSEMBLY INSTRUCTIONS (Continued)

APPLY POWER



BEFORE YOU APPLY POWER TO THE GRINDER, REFER TO THE "IMPORTANT GROUNDING INSTRUCTIONS".



FIG. 27

115 Volt Model Only. Plug the control box power cord into a standard 115V AC 20-amp grounded receptacle. See FIG. 27.

220 Volt Model Only. For 220 Volt Applications order Part No. 5550915 or 5550925, which includes a prewired 2 KVA 220 V step down to 115V 50-60 Hz transformer. See details on Page 11.

IT IS RECOMMENDED THAT THIS SPIN/RELIEF GRINDER HAS ITS OWN PERMANENT POWER CONNECTION FROM THE POWER DISTRIBUTION PANEL, WITH NO OTHER MAJOR POWER DRAW EQUIPMENT ON THE SAME LINE.

The grinder is equipped with a low voltage relay which is factory preset at 100 VAC. If the power supply line does not deliver 100 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is inadequate and must be correct before proceeding further with the grinder.

IT IS REQUIRED THAT THE POWER DELIVERED TO THIS GRINDER IS 115 VAC - 20 AMPS. THE TOLERANCE ON THIS POWER REQUIREMENT IS +/- 5%. THEREFORE THE MINIMUM VOLTAGE REQUIREMENT IS 109VAC WITH 20 AMPS. VOLTAGE MUST BE CHECKED WITH ALL EQUIPMENT UNDER LOAD (OPERATING) ON THE CIRCUIT.

DO NOT OPERATE THIS GRINDER WITH AN EXTENSION CORD.



PROPER GROUNDING OF THE RECEPTACLE GROUND IN YOUR BUILDING MUST BE VERIFIED. IMPROPER GROUNDING IN YOUR BUILDING MAY CAUSE THE GRINDER TO MALFUNCTION.

FOR 20 AMP RATED LARGE MACHINES

Below is a list of required wire size in your building.

For 0 to 40 Feet from panel to receptacle = Use 12 Ga. Wire.
For 40 to 60 Feet from panel to receptacle = Use 10 Ga. Wire.
For 60 to 100 Feet from panel to receptacle = Use 8 Ga. Wire.
For 100 to 160 Feet from panel to receptacle = Use 6 Ga. Wire.

For 0 to 12 Meters from panel to receptacle = Use 4.0mm Wire.
For 12 to 18 Meters from panel to receptacle = Use 6.0mm Wire.
For 18 to 30 Meters from panel to receptacle = Use 10.0mm Wire.
For 30 to 48 Meters from panel to receptacle = Use 16.0mm Wire.

ASSEMBLY INSTRUCTIONS (Continued)

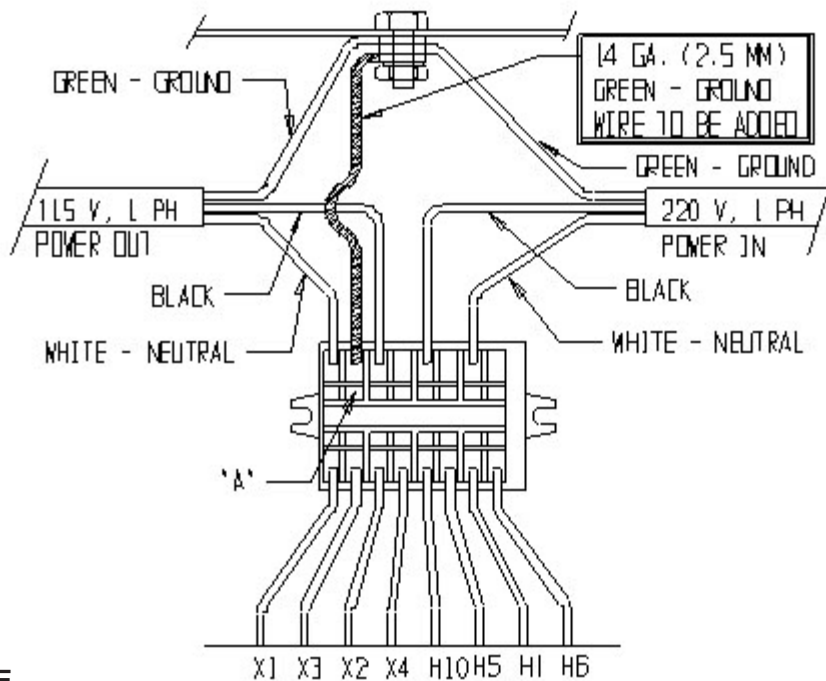
FOR 220 V 50 or 60Hz applications Product No. 5550915 or 5550925 should be ordered.

5550915 or 5550925 includes a 2 KVA 220V, step down to 115 V 50-60 Hz transformer.

The wiring diagram is shown in FIG. 28.

The power cord has no connector. A connector which is appropriate for your locality and 220 volt, 10 amp application should be installed.

USE ONLY A QUALIFIED ELECTRICIAN TO COMPLETE THE INSTALLATION.



INDIVIDUALLY WIRE NUT TRANSFORMER LEADS H2, H3, H4, H7, H8 AND H9

INSTALL THE GREEN WIRE SUPPLIED INTO THE TERMINAL BLOCK IN THE HOLE OPPOSITE WIRE X3 AS SHOWN. TO INSTALL THE WIRE INSERT A SMALL SCREWDRIVER INTO THE CAVITY MARKED 'A' TO OPEN THE WIRE HOLE.

ATTACH THE OTHER END OF THE GREEN WIRE SUPPLIED TO THE GROUND STUD ON THE TRANSFORMER.

FIG. 28

IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction or breakdown, grounding reduces the risk of electrical shock by providing a path of least resistance for electrical current.

This Grinder has an electrical cord with an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded according to all local or other appropriate electrical codes and ordinances.

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly sized circuit breaker or fuse.

Never modify the plug provided with the machine--if it won't fit the outlet, have a proper outlet and circuit installed by a qualified electrician.



ALWAYS PROVIDE A PROPER ELECTRICAL GROUND FOR YOUR MACHINE. AN IMPROPER CONNECTION CAN CAUSE A DANGEROUS ELECTRICAL SHOCK. IF YOU ARE UNSURE OF THE PROPER ELECTRICAL GROUNDING PROCEDURE, CONTACT A QUALIFIED ELECTRICIAN.

ASSEMBLY INSTRUCTIONS (Continued)

INSTALLATION OF REEL LIFT ASSEMBLY ON MODEL 5550920

The reel lift has been fully assembled at the factory.
The only installation required is to remove the
shipping bolt and packing material between the lift
ramp and the lift body. See FIG. 29

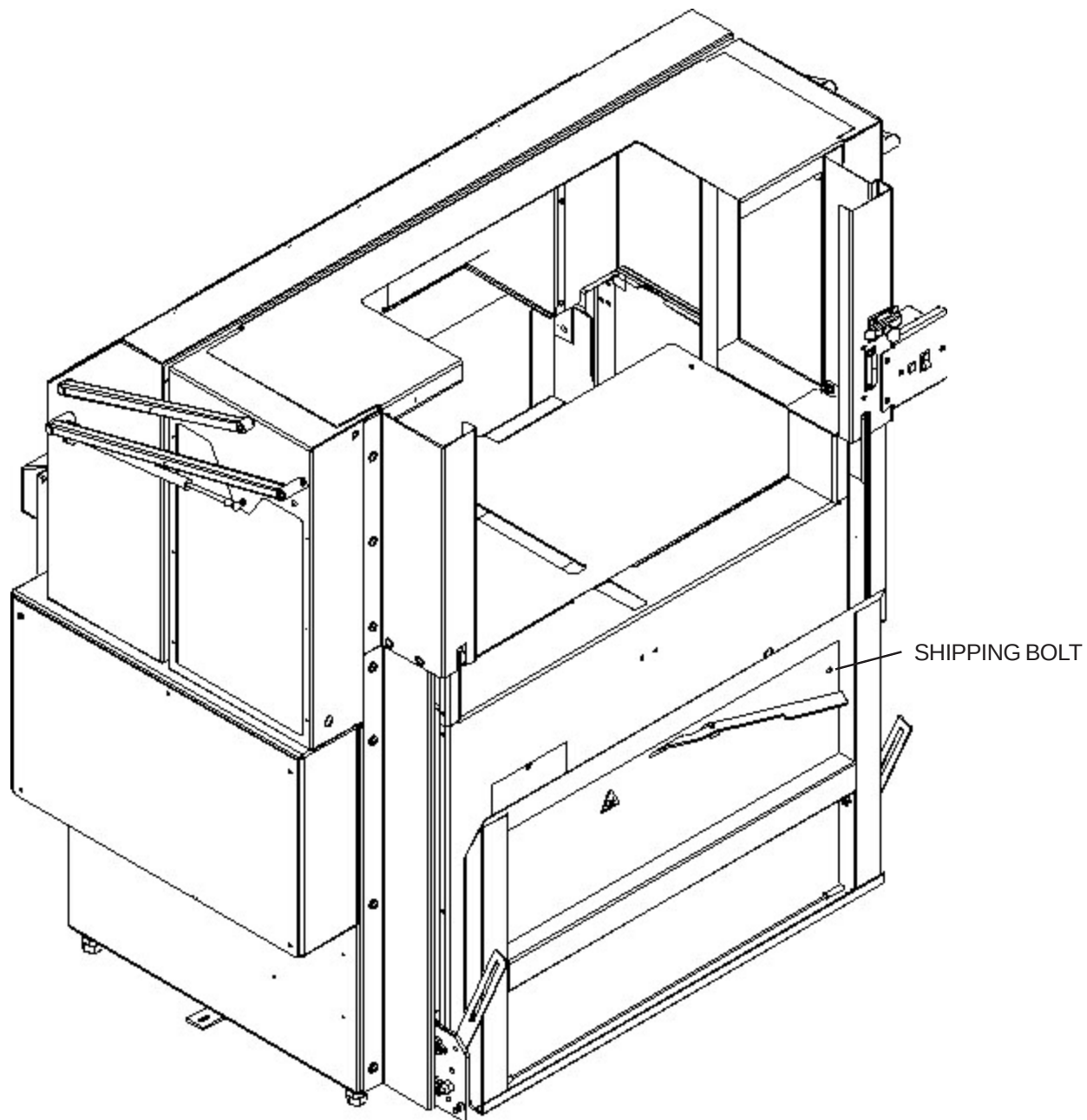


FIG. 29

PERIODIC MAINTENANCE

DAILY MAINTENANCE IS SPECIFIED ON PAGE 4 OF THE OPERATOR'S MANUAL, AND IS TO BE PERFORMED BY THE OPERATOR.

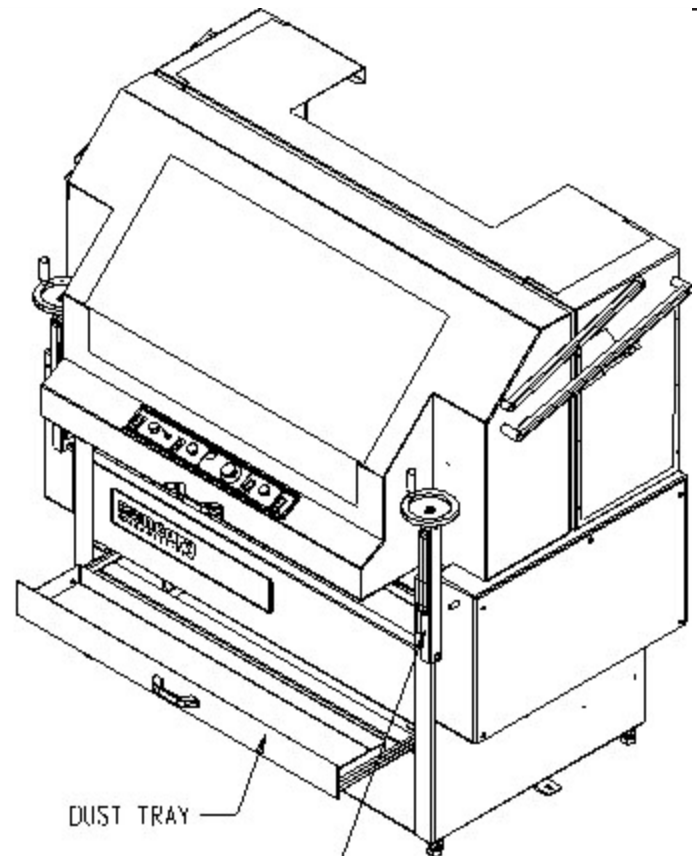
LISTED BELOW ARE PERIODIC MAINTENANCE ITEMS TO BE PERFORMED BY YOUR COMPANY'S MAINTENANCE DEPARTMENT:

1. Clean the dust tray located at the lower front of the machine monthly using a vacuum or by removing it. Pull the tray out until the back of the tray is even with the front of the frame and vacuum it out. To remove continue to pull straight out until the tray is free.

USE CAUTION WHEN PULLING THE TRAY OUT AS THERE IS NO MECHANICAL STOP. WHEN REMOVING TRAY PULL STRAGHT OUT AND SUPPORT IT TO PREVENT DUMPING.

2. Inspect the Poly-V belt on the grinding motor for cracking and make any necessary adjustments every three months.
3. Wipe and relube with never-seez, the horizontal adjustment shafts located on the tooling every six months.
4. Wipe and relube with never-seez, the vertical adjustment shafts every six months. Run the arms up and down to coat the working areas of the shaft.
5. Inspect the traverse cog belt for cracking and defects every three months. Remove any grit or dust that may affect the function of the belt. Adjust tension if necessary per procedures called out in the adjustment section.
6. Lubricate grinding shaft bearings with one shot of grease once every 2 years.

DO NOT GREASE BEARINGS FOR FIRST 2 YEARS. THEY ARE GREASED AT THE FACTORY AND GREASING MAY CAUSE THE BEARINGS TO OVERHEAT AND FAIL PREMATURELY.



DUST TRAY

VERTICAL ADJUSTMENT
SHAFTS LOCATED INSIDE
HOUSING - ACCESS THRU
STIFF PANELS.

FIG. 30

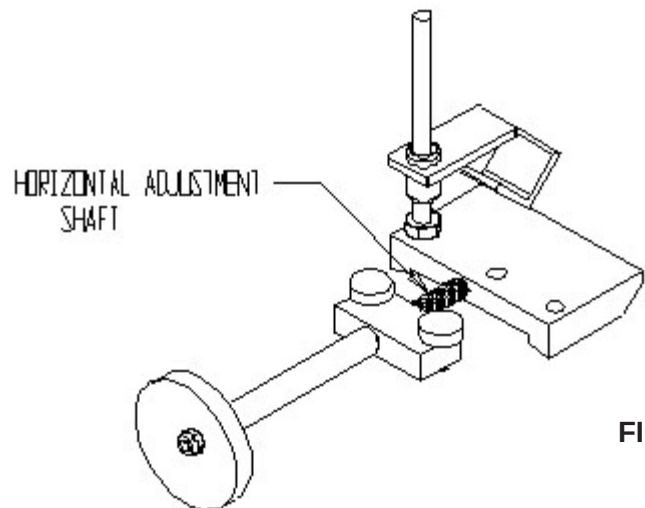


FIG. 31

LUBRICATION

LUBRICATION OF GRINDING SHAFT AND LINEAR BEARINGS

STEP 1 – Thoroughly clean all three shafts.

STEP 2 – Flood spray all three shafts with WD40 until the lubricant is dripping off the shafts. Then run the grinding head assemblies back and forth through their full range of travel. This will remove the dust and deposits from inside the wheel flanges. Repeat if necessary until lubrication is clear of deposits. Clean keyways located on the grinding shaft with soft brush.

STEP 3 – With a clean rag, wipe off the excess amount of lubricant from the shafts. Run the grinding assemblies through their range of travel and wipe the shafts after each traverse. Repeat until the shafts are dry to the feel. This completes the lubrication process.

If the unit will be shut down for an extended period of time, more than four weeks, then the shafts and other appropriate parts of the unit should be flooded with lubricant and that lubricant left in place until the unit is brought back into service. When the unit is brought back into service the full lubrication procedure as stated above should be repeated.

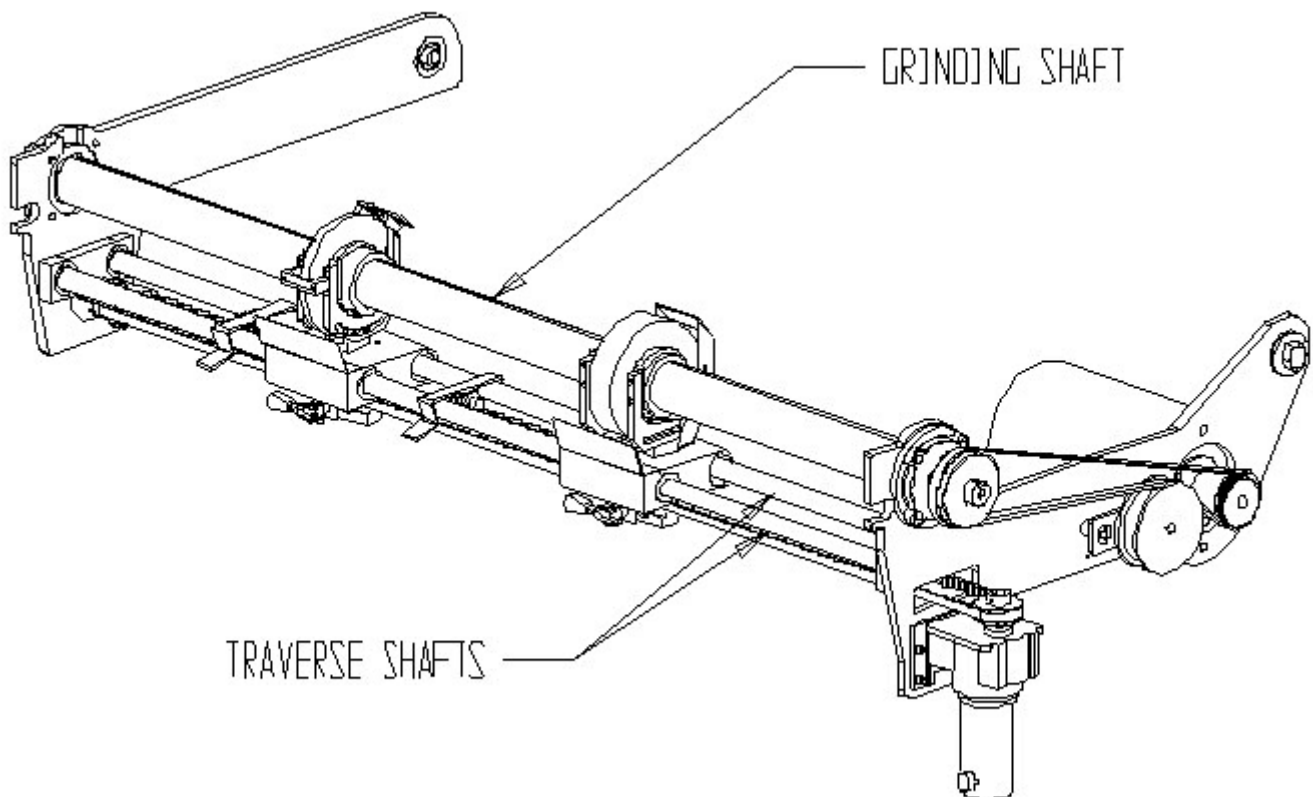


FIG. 32

MAINTENANCE (Continued)

REPLACEMENT OF GRINDING WHEEL

To replace the wheel first remove the left side cover panel. Now, lower the left side of the grinding shaft and raise the right side. Loosen the two bolts that hold the bearings on the relief hub so that that bearings fall away from the wheel and hub (toward the front of the machine). Press the index finger down and the wheel and hub assembly should move freely to the right. Loosen the setscrews on the bearing and remove the screws that hold the bearing to the left arm.

Remove the bearing and lift the left end of the grinding shaft. Slide the grinding wheel hub assembly(s) off the shaft taking note of what side the nut is on. Using the spanner wrench (50014) remove and replace the grinding wheel(s) on the hub assembly.



NOTE: THE RELIEF HUB HAS A LEFT HAND THREAD FOR THE NUT. THE SPIN HUB HAS A RIGHT HAND THREAD.

Place the grinding wheel hub assembly(s) back on the grinding shaft and make sure the spin hub is located between the drive yoke assembly and the relief hub is to the right of the drive assembly.



MAKE SURE THE WHEEL(S) IS PLACED ON THE SHAFT WITH THE SAME ORIENTATION AS SHOWN. FAILURE TO INSTALL CORRECTLY WILL CAUSE THE WHEEL NUT TO LOOSEN. (THE NUT ON THE RELIEF HUB SHOULD BE TO THE RIGHT & THE NUT ON THE SPIN HUB SHOULD BE TO THE LEFT.)

Reinstall the bearing on the left side of the shaft making sure to fit the pilot on the bearing into arm. Tighten mounting screws, and tighten the setscrews to the shaft. Reinstall the left side cover panel. Move bearing support back in place. See relief hub bearing adjustment complete details.

WHEEL DRESSING

If the grinding wheel becomes loaded with material it may be necessary to dress the wheel. The 555 is supplied with a diamond dresser. To use, place the dresser on the spin drive horizontal arm in the area where the wheel is to be dressed. Adjust the dresser to the appropriate position and angle. Raise the grinding wheel so it is nearly touching the dresser.

For dressing the spin grinding wheel, put the dresser in the straight position. Close the doors and infeed the

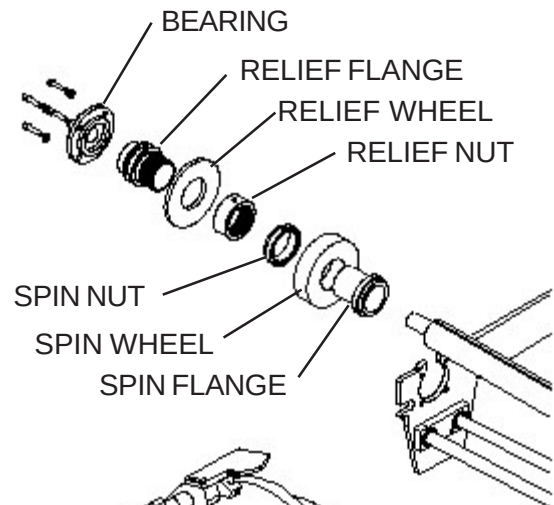


FIG. 33

Loosen bolts and tip back. Press in indexing finger and the wheel should slide freely to the right.

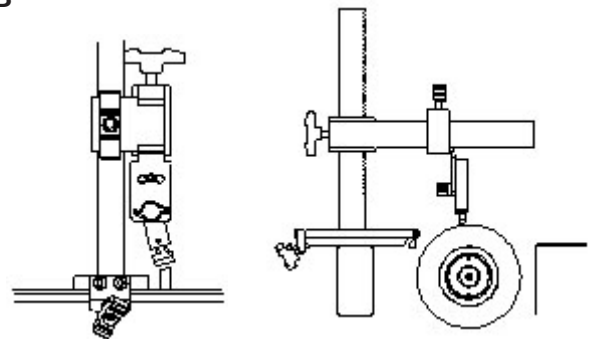


FIG. 34

spin grinding wheel into the dresser and then move the grinding wheel side to side against the dresser which will dress the full face of the wheel.

For dressing the relief wheel, put the dresser at the correct angle for normal helix reel or reverse helix reel. See pages 24 and 25 of the Operators Manual. Close the doors and infeed the relief grinding wheel into the dresser. Do Not move the grinding wheel from side to side.

MAINTENANCE (Continued)

GRINDING MOTOR BELT REPLACEMENT/ ALIGNMENT

To replace or inspect the grinding motor belt, remove the right side cover panel. To remove the belt, pull down on the tensioner pulley.

For the belt to function properly the grinding shaft pulley and the grinding motor pulley must be in line with the tensioner pulley. To adjust the pulley position loosen the setscrews on the pulley. Locate the belt in the center of the idler pulley. Measure from the arm to the edge of the belt at the idler pulley. Adjust the two other pulley's until the same measurement is achieved and tighten the pulley setscrews.

Before reinstalling the right side cover panel, run the grind motor to assure that the belt is not misaligned. The belt will walk off the pulley if the system is not aligned properly.

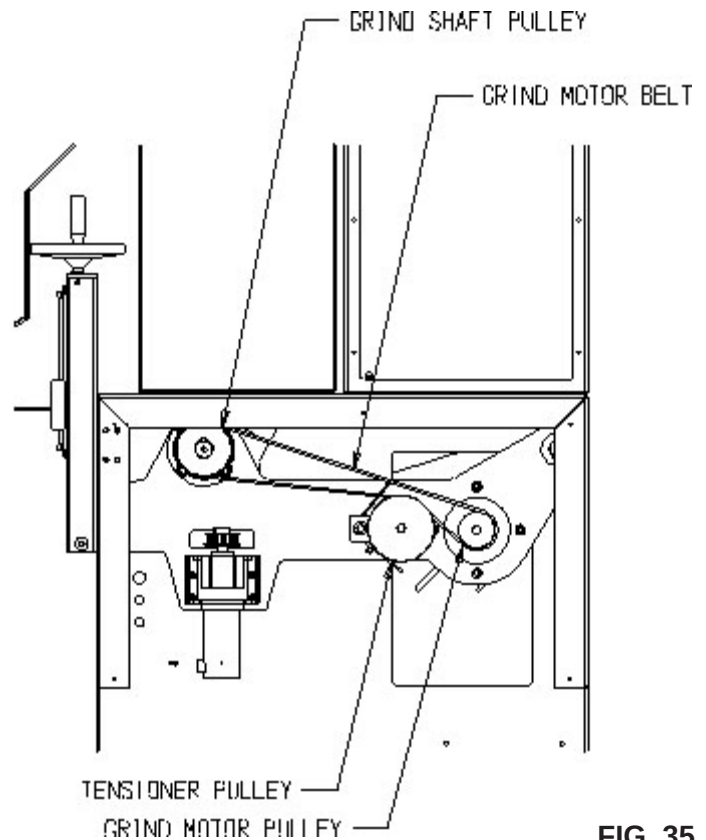


FIG. 35

TRAVERSE BELT REPLACEMENT

To replace the traverse belt, remove the left side cover panel, then loosen the nuts on the left side pulley that are used to tension the belt. Remove the right side cover panel. Loosen the screws holding the traverse motor and tilt the bottom of the motor out releasing any remaining tension on the belt. On the left side remove the nut from the bottom belt tensioning screw, this will allow the belt to be removed.

Place a new belt on the left pulley making sure it is seated properly in the cogged teeth and replace the locknut. Feed the new belt through the slot on the right arm and place on motor pulley. Use the motor as a lever to apply tension to the new belt. Tighten motor screws and adjust the tension in the belt as specified in the BELT TENSION section. Adjust the height of the motor pulley if necessary so the belt is located in the center of the traverse belt clamp.

Test the traverse motor and replace the left side and right side cover panels.

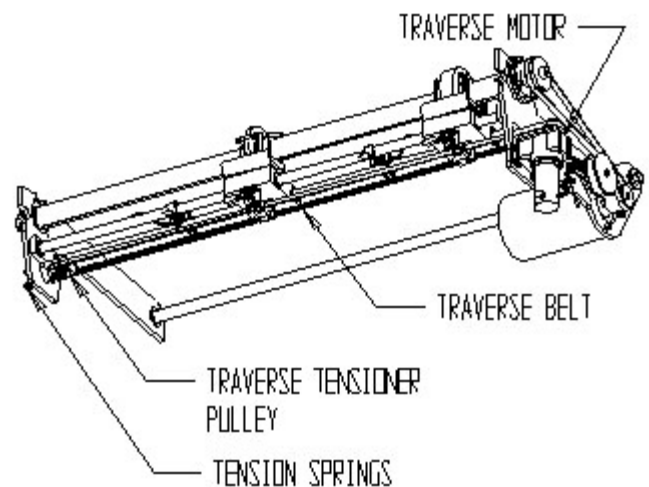


FIG. 36

MAINTENANCE (Continued)

TRAVERSE SHAFT/LINEAR BEARING REPLACEMENT

Remove the left side cover panel. Then remove the grinding shaft by removing the left side bearing and loosening the setscrews on the right side bearing. Also remove the traverse belt.

To remove the traverse shafts first lower the grinding shaft so that it is in its lowest position. Then remove the left side arm.

To remove the left arm, remove the bolt at the rear of the machine. (It may be necessary to clamp onto the shaft that the bolt is screwed into so that it does not spin.) After removing the bolt, pull the arm off the rear shaft. Remove the front of the arm from the vertical adjuster housing, pull the arm straight off the traverse shafts. (Caution should be used as the shafts may come out of the right side arm.)

Slide the grinding head assemblies off the traverse shafts.

Replace the shafts if necessary or press the bearings out of the bearing housings and replace with new bearings and seals. (Two bearings go in the front and 1 in the rear of the housing).

Clean the 2 spherical bearings in the arm and place the traverse shaft into the right arm. Replace the grinding head assemblies (spin first). Clean the bearing in the left arm and slide onto traverse shaft. (Note: The spherical bearing in the arm has to be lined up with the shafts for the shafts to slide into the bearings.) Replace and tighten items in the opposite order of removal. Make sure the wheels are properly located in the correct grinding head assembly with the nut side of the wheel toward the left side of the machine (see Replacement of Grinding Wheel.)

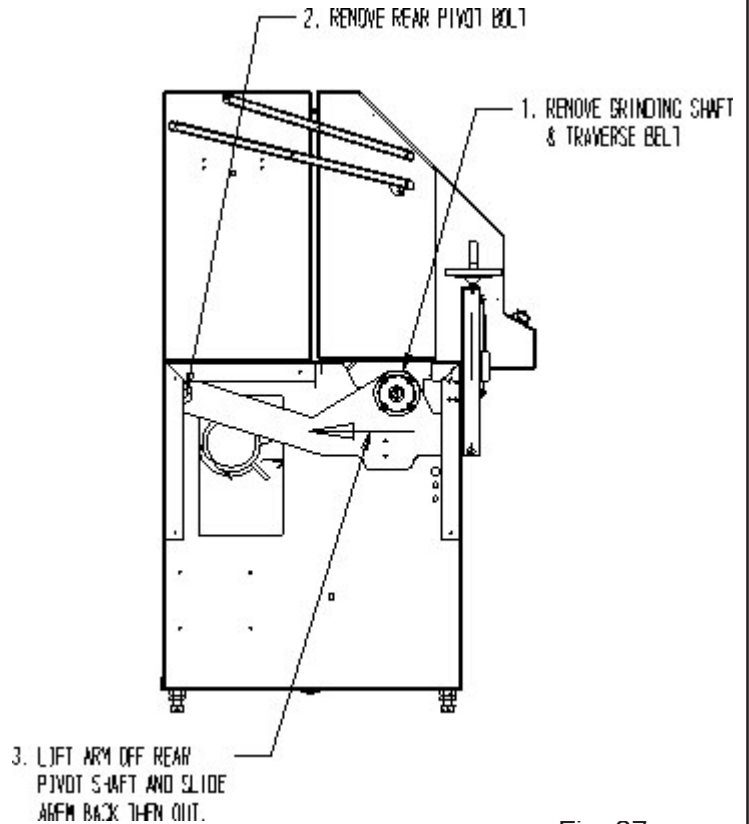


Fig. 37

MAINTENANCE (Continued)

CLEANING AND MAINTENANCE GUIDELINES FOR POLYCARBONATE WINDOWS

Cleaning Instructions

DO NOT USE GASOLINE

Adherence to regular and proper cleaning procedures is recommended to preserve appearance and performance.

Washing to Minimize Scratching

Wash polycarbonate windows with a mild dish washing liquid detergent and lukewarm water, using a clean soft sponge or a soft cloth. Rinse well with clean water. Dry thoroughly with a moist cellulose sponge to prevent water spots. Do not scrub or use brushes on these windows. Also, do not use butyl cellosolve in direct sunlight.

Fresh paint splashes and grease can be removed easily before drying by rubbing lightly with a good grade of VM&P naphtha or isopropyl alcohol. Afterward, a warm final wash should be made, using a mild dish washing liquid detergent solution and ending with a thorough rinsing with clean water.

Minimizing Hairline Scratches

Scratches and minor abrasions can be minimized by using a mild automobile polish. Three such products that tend to polish and fill scratches are Johnson paste Wax, Novus Plastic Polish #1 and #2, and Mirror Glaze plastic polish (M.G. M10). It is suggested that a test be made on a corner of the polycarbonate window with the product selected following the polish manufacturer's instructions.

Some Important "DON'TS"

- .. **DO NOT** use abrasive or highly alkaline cleaners on the polycarbonate windows.
- .. **Never** scrape polycarbonate windows with squeegees, razor blades or other sharp instruments.
- ☐ Benzene, gasoline, acetone or carbon tetrachloride should **NEVER** be used on polycarbonate windows.
- .. **DO NOT** clean polycarbonate windows in hot sun or at elevated temperatures.

Graffiti Removal

- Butyl cellosolve, (for removal of paints, marking pen inks, lipstick, etc.)
- The use of masking tape, adhesive tape or lint removal tools works well for lifting off old weathered paints.
- To remove labels, stickers, etc., the use of kerosene, VM&P naphtha or petroleum spirits is generally effective. When the solvent will not penetrate sticker material, apply heat (hair dryer) to soften the adhesive and promote removal.

GASOLINE SHOULD NOT BE USED!

MAINTENANCE (Continued)

DIGITAL GAGE

Important

Do not mark the scale unit with an electric engraver or scratch the scale.

Always use an SR44 battery (silver oxide cell)

If the scale will not be used for more than three months, remove the battery and store it properly. Otherwise, leakage, if any, from the battery may damage the unit.

Description of Parts

- | | |
|------------------------|--------------------|
| 1. Beam | 2. Main Scale |
| 3. Battery compartment | 4. Outp Connection |
| 5. Display | 6. ON/OFF Power |
| 7. ZERO/ABS switch | 8. Origin Switch |
| 9. Inch/mm Switch | 10. Tapped hole |
| 11. Slider | |

Battery Installation and Origin Setting

Set the origin of the scale after installing the battery. Otherwise, the error sign("E" at the least significant digit) may appear, resulting in incorrect measurements.

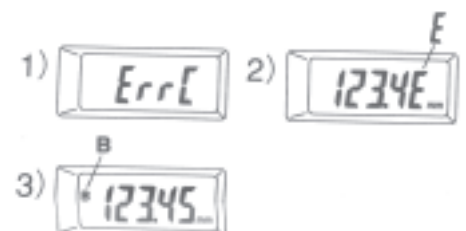
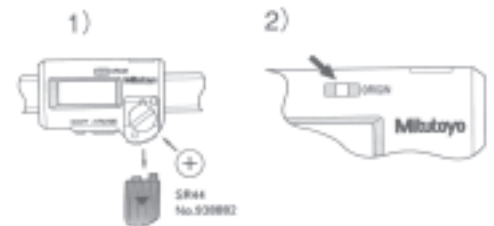
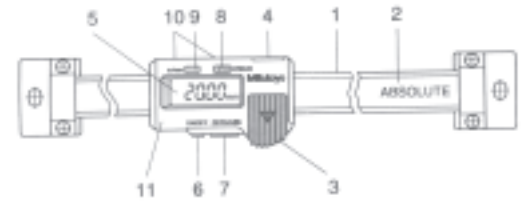
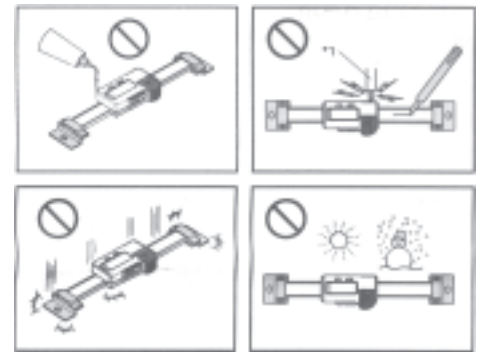
- 1) To install the battery, remove the compartment lid and install the SR44 battery with its positive side facing up. After the battery is installed, set the origin.
- 2) To set the origin, move the slider to an area you wish to set as your origin. Turn the power on. Hold the ORIGIN switch down for more than one second. The "0.00" display appears, indicating origin setting is complete. The origin will be retained even if the power is turned off.

Incremental (INC) & Absolute (ABS) mode

The LCD will display measurements from the origin when turned on (ABS mode). To set the origin see above. The display can be set to zero at any desired position by pressing the ZERO/ABS switch. INC indicator will appear in the display (INC mode), permitting measurements from this zero point. To return to the ABS mode hold the ZERO/ABS button for more than 2 seconds.

Error Symptoms & Remedies

- ERRC and display flickering: Occurs when the scale surface is stained. Clean the scale surface and coat a thin film of low viscosity oil to keep out moisture.
- E in the least significant digit: This occurs when the slider is moved too quickly, but it does not affect the measurement. If it stays on when the slider stops, the scale surface is probably stained. If this is the case, take remedies as for ERRC.
- B indication: Battery voltage is low. Replace the battery as soon as possible.



ADJUSTMENTS

PROXIMITY SWITCH

For the proximity switch to perform properly and reverse the direction of the grinding head assembly the sensor end of the prox must face toward the head assembly that is in use and must be mounted such that it is located past the edge of the prox holder.

NOTE: The light on the proximity switch activates when metal is approximately 3/16" [4.6 mm] from front of proximity switch.

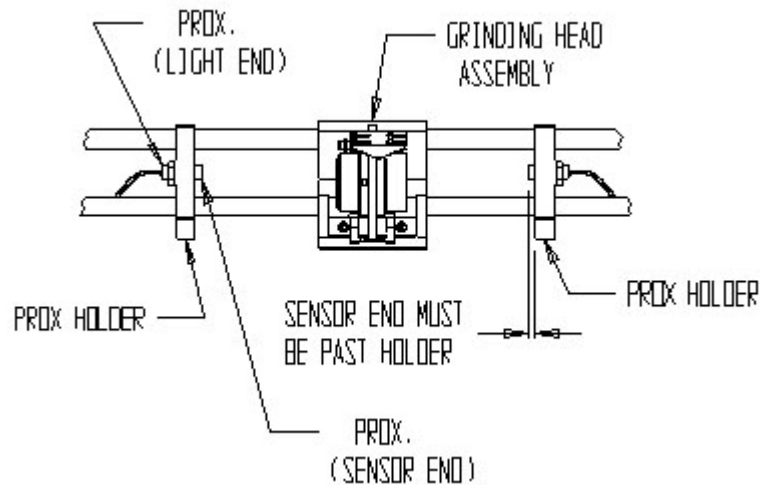


FIG. 38

VERTICAL INFEEED SHAFT DRAG

If the grinding shaft tends to walk during grinding, the drag on the vertical adjusters needs to be increased. To increase the drag in the vertical adjustment shafts, tighten the setscrew on the back of the vertical adjustment housing.

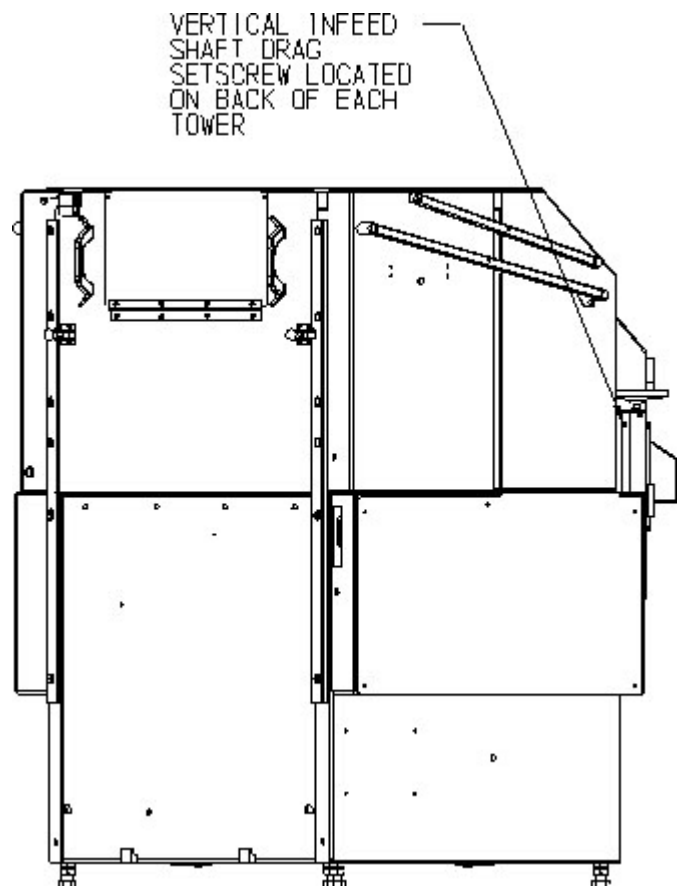


FIG. 39

ADJUSTMENTS (Continued)

TRAVERSE BELT TENSION

To adjust the tension on the traverse belt, tighten the screws and nuts located to the left side of the traverse belt behind the left side cover panel to a minimum of 1.75" [44 mm]. The traverse belt should be level when adjusting the belt tension.



**DO NOT OVERTIGHTEN.
OVERTIGHTENING COULD
DAMAGE THE BELT OR
TRAVERSE DRIVE SYSTEM.**

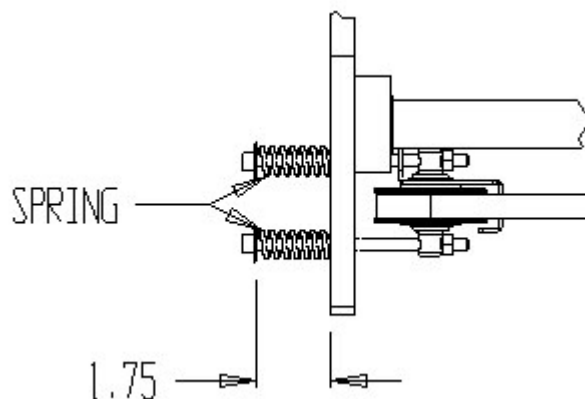


FIG. 40

TRAVERSE CLAMP FORCE

If the traverse clamp is slipping during regular operation it may be necessary to tighten the clamp. To tighten, loosen the jam nut and screw the tip out. Move the traverse belt out of the way and verify the clamped distance from the tip to the clamping block (shoe). Jam the nut against the clamp being careful not to move the tip.

The bracket that supports the clamp is also equipped with slots if further adjustments need to be made. To move the bracket loosen the two screws that are holding it in place and slide forward or back. Retighten the screws and make sure they are tight or the bracket will move during clamping. Check the tip distance and make any necessary adjustments.

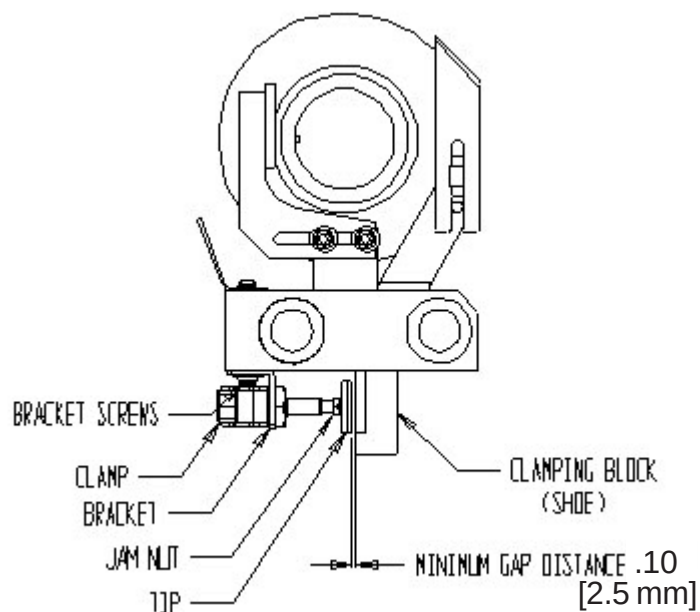


FIG. 41

THE TIP HAS BEEN FACTORY SET SO THAT IT WILL SLIP IF THE GRINDING HEAD ASSEMBLY COMES IN CONTACT WITH SOMETHING. CAUTION SHOULD BE USED AS ADJUSTING THE TIP WILL AFFECT THE SLIP LOAD AND COULD DAMAGE THE CLAMP TIP, BELT OR TRAVERSE DRIVE SYSTEM.

ADJUSTMENTS (Continued)

SPIN GRINDING HEAD WEAR PADS

The bronze wear pads used to move the spin wheel will wear and may need to be adjusted or replaced.

Replace or flip the pads when they wear to within a 1/16" [1.5 mm] of the screws. To accomplish the best fit, the holes in the pads are offset. When installing new pads flip or rotate the pads until Gap 2 is as small as possible without the pads pinching the wheel.

On the spin grinding head assembly, the pads can be adjusted in and out by loosening the screws located on the sides of the yokes. Gap 1 should be adjusted to about 1/16" [1.5 mm]. See FIG. 42.

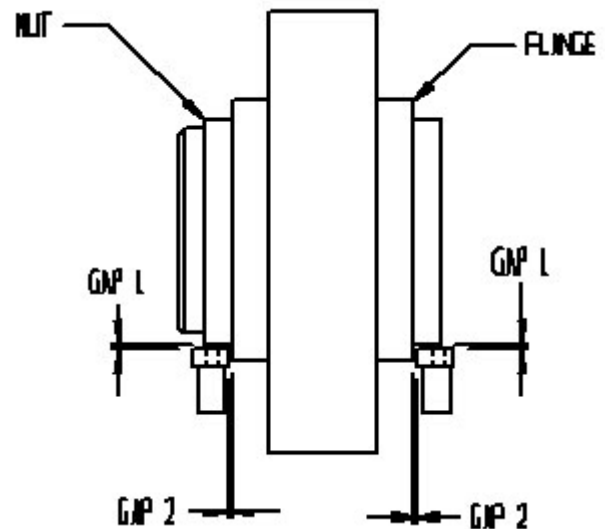


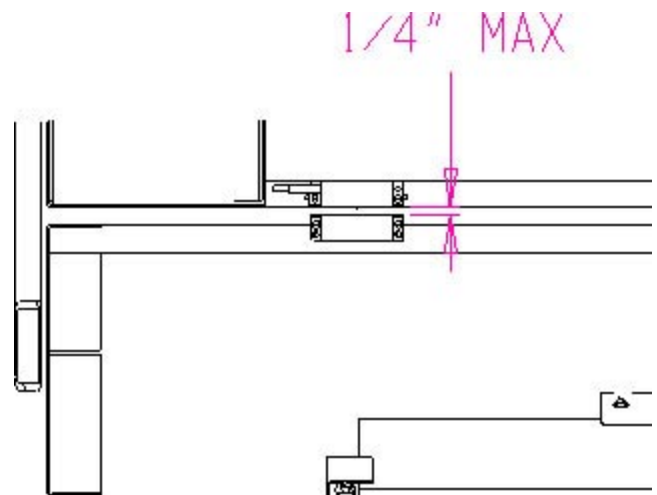
FIG. 42

SAFETY SWITCH ALIGNMENT/REPLACEMENT

The safety switch located on the right guard door must line up properly with the key located on the opposite door or the grinder will not function.

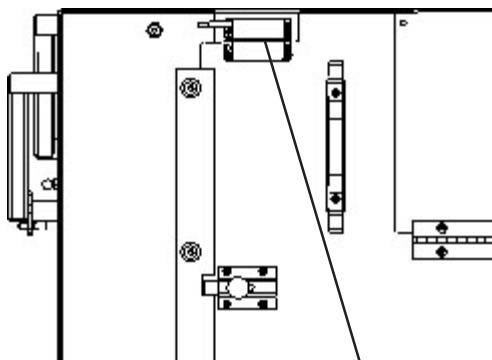
The switch and key must be within 1/4" [6 mm] and the targets on the switches must line up in order for the switch to function properly. See FIG. 43A, 43B and 43C.

The switch and key are attached to the guarding using a "Torx" style tamper resistant screws.



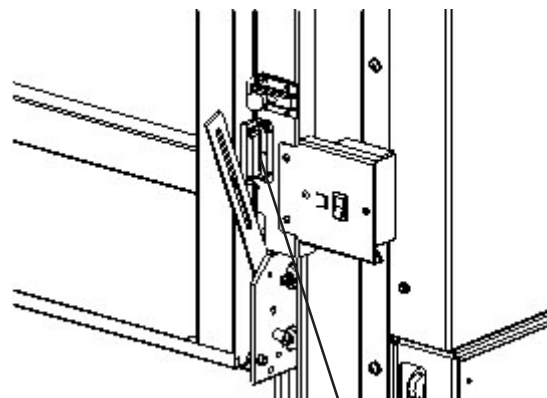
FRONT DOOR SWITCH
(INSIDE UPPER RIGHT SIDE)

FIG. 43A



REAR DOOR SWITCH
(NON-LIFT MACHINE)

FIG. 43B



REAR DOOR SWITCH
(LIFT MACHINE)

FIG. 43C

ADJUSTMENTS (Continued)

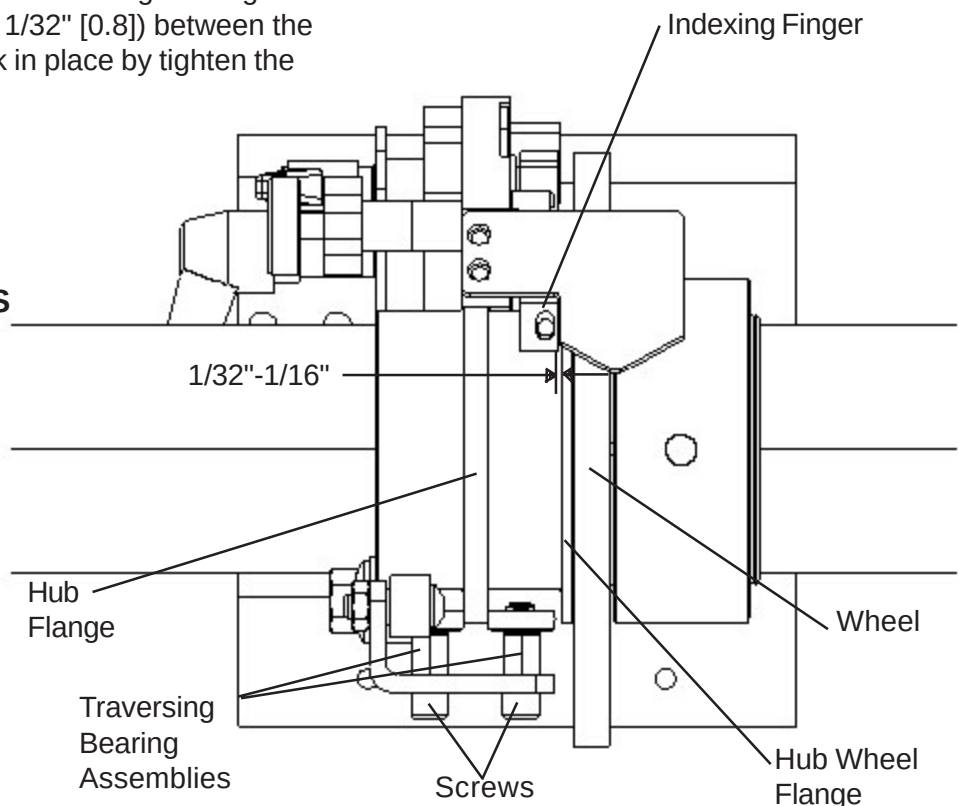
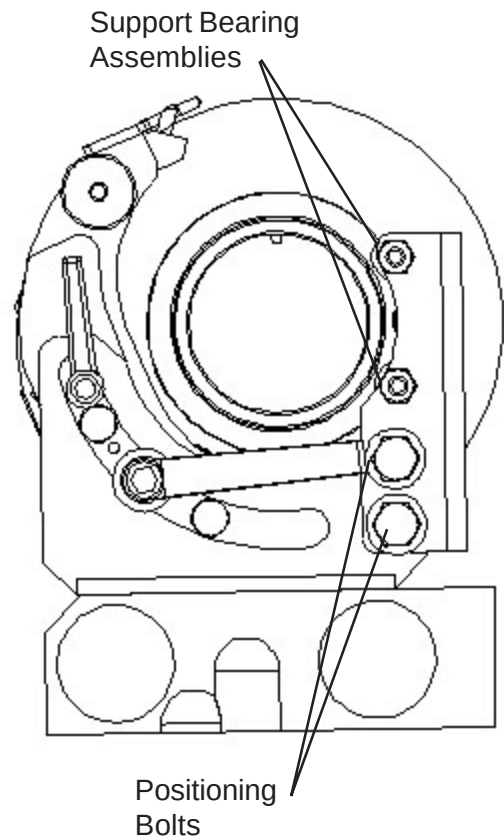
RELIEF GRINDING HEAD BEARING ADJUSTMENTS

It may be necessary to adjust the guide bearings on the relief head. To adjust the position of the support bearings, loosen the two positioning bolts located on the side of the support assembly. Press on the support assembly until both support bearing assemblies are touching the hub. Hold the support in place with the bearing assemblies touching the hub and tighten the two bolts positioning bolts. Check to see if both bearing assemblies are touching or have minimal clearance to the hub by rotating the grinding shaft.

NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.

To adjust the traversing bearing assemblies use an allen wrench and 3/8" wrench. Use the allen wrench to loosen the screws while using the 3/8" wrench to hold the bearing assembly shaft. After loosening the bearing assemblies push them away from the hub flange. Now Position the hub so there is 1/32"-1/16" [0.8-1.6] clearance between the indexing finger and the hub wheel flange. Now bring the LEFT traversing bearing assembly in until it just contacts the hub flange. Lock this bearing in place by tightening the screw. Press on the wheel so that the hub flange is against the left traversing bearing and verify the clearance of the indexing finger to the wheel flange. Now bring the Right traversing bearing in until there is a minimum gap (approx. 1/32" [0.8]) between the bearing and the hub flange. Lock in place by tighten the screw. Check to make sure be freely and with minimum slop.

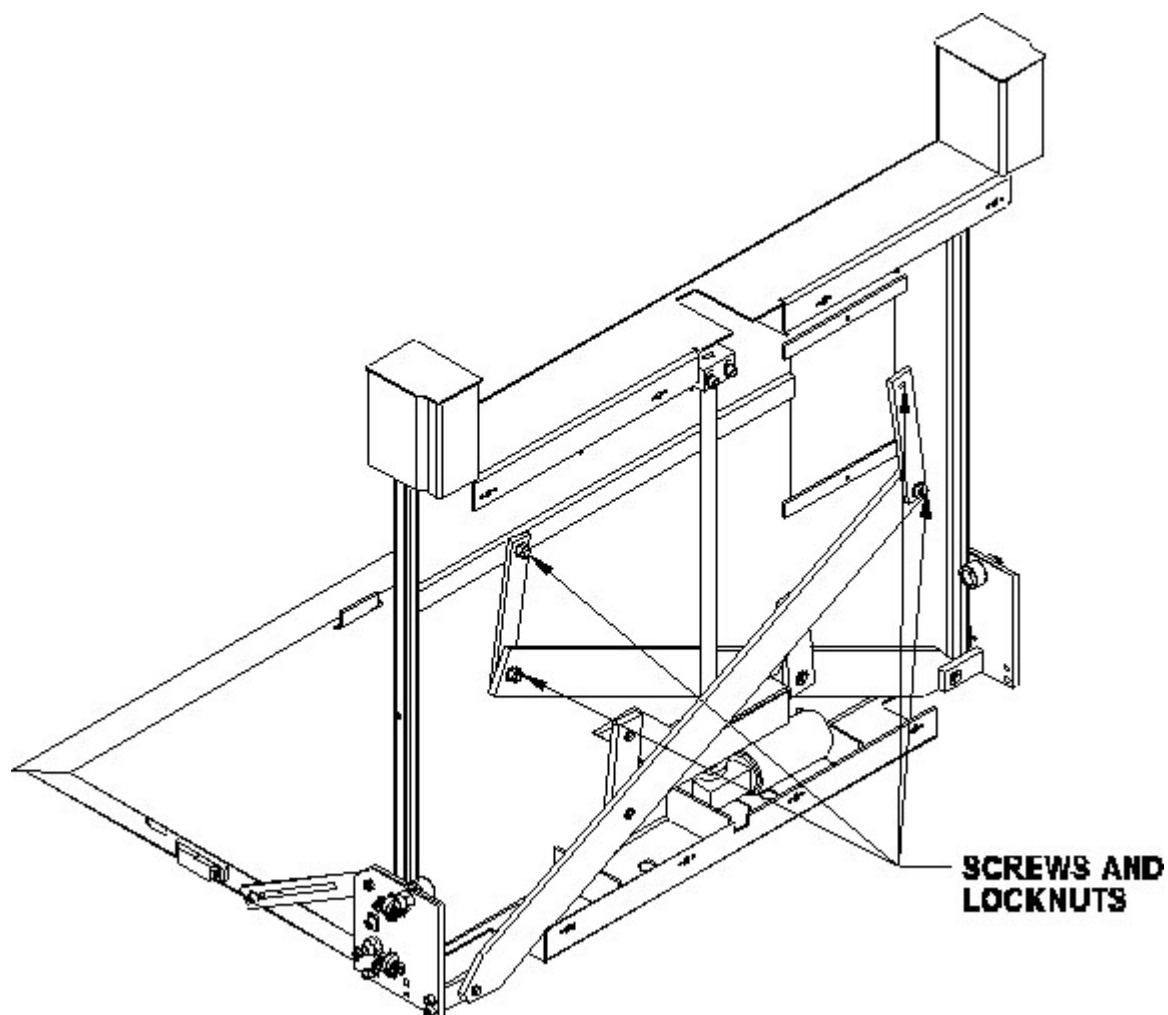
NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB FLANGE CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.



ADJUSTMENTS (Continued)

REEL LIFT PIVOT BOLTS

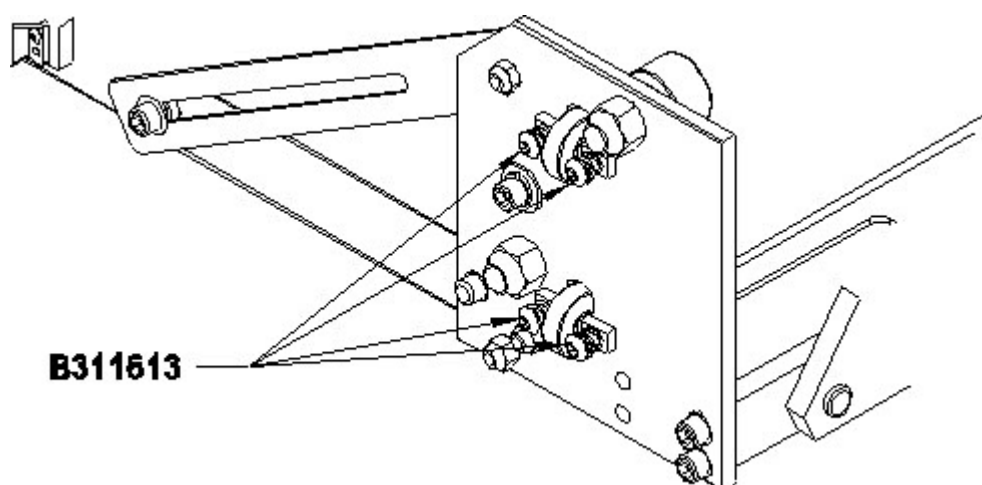
There are four pivot bolts on the reel lift that must be adjusted correctly for proper lift function. Tighten the screws and locknuts and then loosen $1/8$ to $1/4$ turn until the screw turns freely with fingers when the screw is under no load. See items marked "SCREWS AND LOCKNUTS" below.



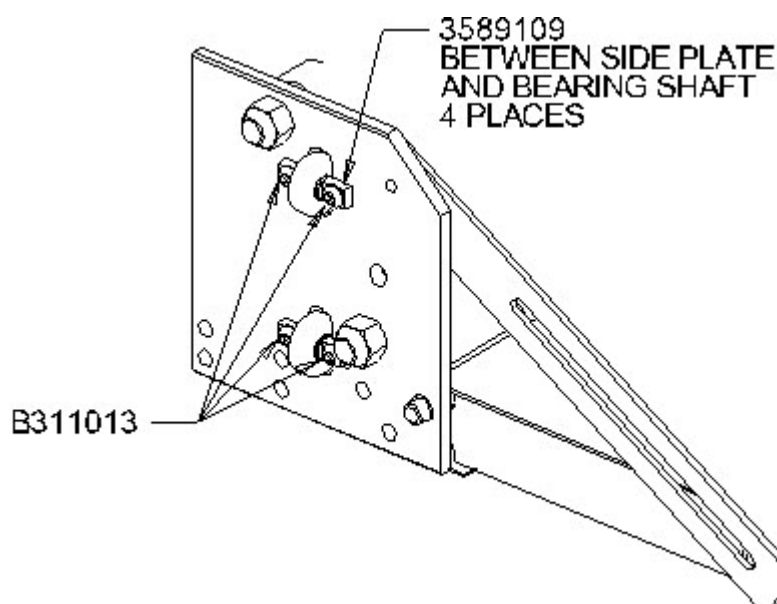
ADJUSTMENTS (Continued)

REEL LIFT SIDE BEARING ASSEMBLIES

There are four side bearing assemblies (two on each side) on the reel lift. The two on the right side looking from the front of the grinder are fixed with screws and washers. The two on the left side looking from the front of the grinder are spring loaded against the lift frame. They must be adjusted correctly for proper lift function. These left side screws can be accessed by removing the left side lower lift guard. Tighten the screws until tight (springs solid) with blue loctite no. 242, then back the screws out ONE full turn. See items marked "B311613" below. When complete, reinstall the left side lower lift guard.



LEFT SIDE LOOKING FROM FRONT OF GRINDER



RIGHT SIDE LOOKING FROM FRONT OF GRINDER

CONTROL BOARD POTENTIOMETER ADJUSTMENTS

POTENTIOMETER ADJUSTMENTS TRAVERSE DRIVE CONTROL (TDC)

Min. Speed--Factory set at full (CCW) 8:30. Do not change this setting.

(Right Traverse) Forward Torque--Factory set at full (CW) 4:30. Do not change this setting.

(Left Traverse) Reverse Torque--Factory set at full (CW) 4:30. Do not change this setting.

IR COMP--Factory set to 9:00. IR COMP is current (I) resistance (R) compensation (COMP). IR COMP adjusts the output voltage of the drive which balances load to motor RPM. Regulation of a traverse motor may be improved by slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise until the symptoms disappear.

Max. Speed--Set at 3:30 for maximum voltage of 90 Volts DC to the traverse motor. When voltage is above 90 volts DC, the traverse motor will start to pulsate and not run smoothly.

(Right Traverse) Forward Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

(Left Traverse) Reverse Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

(DB) Dead Band is the potentiometer setting for the 50 or 60 Hz cycle control. Factory set to 9:00, works for both 50 and 60 Hz. Do not change this setting.

Calibrating the **DWELL TIME** rotary DIP switch adjusts the amount of time the process remains in the stop position after a limit switch is actuated. The **DWELL TIME** range is adjustable from 0-4 seconds. A DIP switch setting of 0 sets the **DWELL TIME** to 0 seconds, while a setting of 9 sets the **DWELL TIME** to 4.5 seconds. Dwell time is preset to #4 setting for a 2 second dwell time when reversing at each end of stroke. A setting of 6, sets the dwell time at 3 seconds, etc.

Diagnostic LED's indicate the function that is currently being performed:

POWER indicates that AC power is being applied to the control.

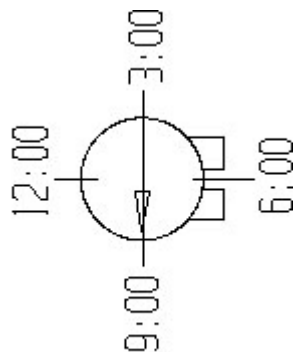
FORWARD indicates that the process is running in the forward direction (traversing left).

REVERSE indicates that the process is running in the reverse direction (traversing right).

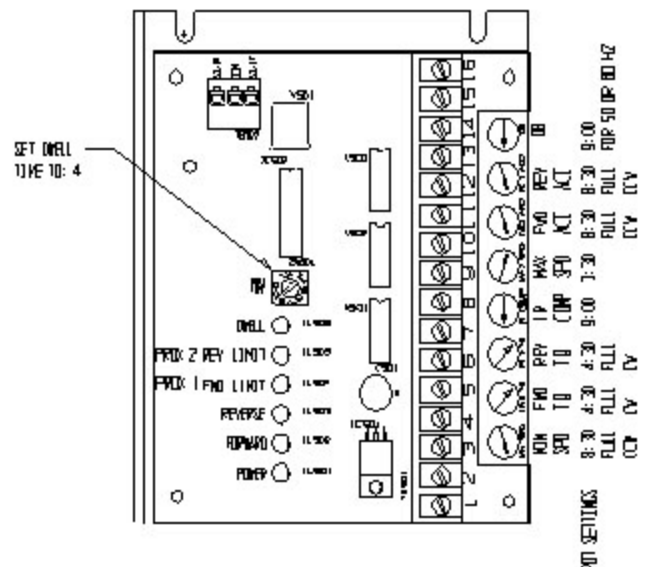
PROX 1 FWD LIMIT lights when the forward limit switch is actuated (left prox.).

PROX 2 REV LIMIT lights when the reverse limit switch is actuated (right prox.).

DWELL lights when the process remains stopped after a proximity switch is actuated.



**Potentiometer
Clock Orientation**



CONTROL BOARD POTENTIOMETER ADJUSTMENTS (Continued)

SPIN DRIVE CONTROL BOARD (SDC)

The Spin Drive Control Board has three potentiometers on the lower board and two potentiometers on the upper board as shown on FIG. 45 and FIG. 46. These potentiometers have been set at the factory to the positions shown on FIG. 45 and FIG. 46.

In the Relief Grinding Mode--

The Relief Speed Pot (RSP) and the Relief Torque Pot (RTP) interact with each other. The (RSP) is located on the upper spin board as a relief speed preset at 9:30 (20 Volts DC). See FIG. 45. The (RTP) is located on the control panel and is for relief torque adjustment.

Relief Speed Pot (RSP) when rotated clockwise will increase maximum spin drive speed. This speed should never be above the 10:30 setting.

Relief Torque Pot (RTP) can vary the reel to finger holding torque for relief grinding. The recommended starting point is 30 in/lbs of torque setting. Never adjust the (RTP) potentiometer dial past the red line marking. Setting the reel to finger torque to high could cause the traverse motor system to not operate smoothly.

In the Spin Grinding Mode--

The Spin Torque Potentiometer (STP) and the Spin Speed Pot (SSP) interact with each other. The (STP) is located on the upper spin board as spin torque preset at 2:00 for torque setting. See FIG. 45. The (SSP) is located on the control panel and is for spin speed adjustment.

Spin Torque Pot (STP) controls maximum torque allowable in the spin grinding cycle only. This should never be adjusted past the 2:30 position. If the reel does not turn check that the reel is free turning by hand spinning.

The Spin speed Pot (SSP) controls reel spin speed, adjust as required. This controls the spin drive speed for spinning the reel.

POTENTIOMETERS ON THE LOWER BOARD OF THE SPIN DRIVE CONTROL (SDC) See FIG. 46.

Maximum Speed Pot--

The maximum speed is factory preset to 4:30 (fully clockwise) to allow for maximum spin speed.

Minimum Speed Pot--

The minimum speed is factory preset at 8:30 (full counterclockwise) so zero speed is obtainable for spin speed.

IR Compensation Pot--

The IR Compensation is factory set at 9:00.

Regulation of the spin or relief grind spin motor may be improved by a slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise until symptoms just disappear.

UPPER SPIN BOARD

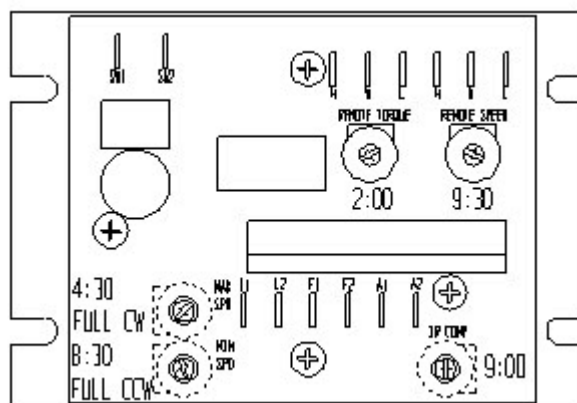


FIG. 45

LOWER SPIN BOARD

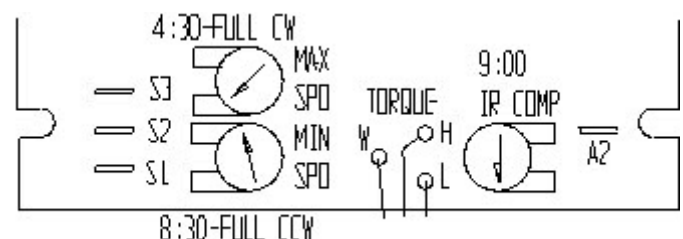


FIG. 46

ELECTRICAL TROUBLESHOOTING

SKILL AND TRAINING REQUIRED FOR ELECTRICAL SERVICING

This Electrical Troubleshooting section is designed for technicians who have the necessary electrical knowledge and skills to reliably test and repair the 555 electrical system. For those without that background, service can be arranged through your local distributor.

This section presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the front of this Manual, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove the control panel cover or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have any question not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

WIRE LABELS

All wires on the 550 have a wire label at each end for troubleshooting. The wire label has a code which tells you wiring information. The wire label has a seven position code. The first two digits are the wire number: 01-99. The next three numbers or letters are the code for the component to which the wire attaches. Example: TDC for Traverse Drive Control. The last two numbers or letters are the number of the terminal on the component to which the wire attaches.

ELECTRICAL TROUBLESHOOTING INDEX

AC Main Power Controls	Page 27-29
Spin Drive Controls	Page 30-34
Grinding Motor Controls	Page 35-36
Traverse Drive Controls-w/prox	Page 37-38
Traverse--stopping and reversing	Page 39-41

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--AC Main Power Controls: no electrical power to control panel.

Verify all wires shown on the wiring diagram on page 76 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Emergency Stop Button(ESS) is Depressed	A. Pull Up on ESS Button	Machine works Yes--end troubleshooting No--go to Step B. next
You must push the System Start Switch (SSS) to get power to control Panel	B. Listen for the Magnetic Starter (MAG) contacts to pull in with a clunk	Machine works Yes--end troubleshooting No--go to step C. next.
Main Power Cord is not plugged in	C. Plug in main power cord	Machine works Yes--end troubleshooting No--go to step D. next.
Guard doors must be closed and ALL Switches MUST be turned OFF for contactor to pull in.	D. Close guard doors and turn off all switches.	Machine works Yes--end troubleshooting No--go to step E. next.
Main 20 amp outlet circuit breaker has tripped	E. Check circuit breaker in your building and reset if necessary. (Check wall outlet with a light to make sure it works)	Machine works Yes--end troubleshooting No--but light works in outlet--go to Step F. next. No--but light does not work in outlet. You must solve your power delivery problem independent of machine.
No 120 Volts AC power to Filter (FTR)	F. Check for 120V at Cord into FTR (Power Cord #32)	FTR "Line" Terminals for 120 Volts AC Yes--Go to Step G. next. No--Replace Power Cord- 6059054
No 120 Volts AC power out of Filter	G. Check for 120V out of FTR	FTR "Load" Terminals for 120 Volts AC Yes--Go to Step H. next. No--Replace Filter
No 120 Volts AC power to Main Circuit Breaker (MCB)	H. Check for 120V to MCB	MCB Bottom Terminal to Terminal Block 4 (Blue) for 120 Volts AC Yes--Go to Step I. next. No--Check wires & replace if needed.
No 120 Volts AC power from Main Circuit Breaker (MCB)	I. Check for 120V to MCB	MCB Top Terminal to Terminal Block 4 (Blue) for 120 Volts AC Yes--Go to Step J. next. No--Flip Switch on MCB to "ON" - Machine works-- end trouble shooting Machine does not work-- replace MCB

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Causes

Checkout Procedure

120 Volts AC power not delivered to Terminal Strip

J. Check for 120 Volts AC at terminal strip.

Terminal "11" on Terminal Strip 2 "07TB2-11" to Terminal Block 4 (Blue) for 120 Volts AC
Yes--Go to Step **K.** next.
No--Check wires #7 & #3, Check Jumper on Terminal Blocks 1-3.

Grinding Motor Switch (GMS) not working

K. Check for 120 Volts AC at GMS Terminals 1

Measure 120 volts AC from GMS Terminal 1 to Term Block 4(Blue)
Yes--Go to Step **L.** next.
No--Flip Switch and check again- Works--Switch is upside down. Does not work-- Check wiring/ Verify Continuity/ Replace Switch

Spin Motor Switch (SMS) not working

L. Check for 120 Volts AC at SMS Terminals 1

Measure 120 volts AC from SMS Terminal 1 to Term Block 4(Blue)
Yes--Go to Step **M.** next.
No--Flip Switch and check again- Works--Switch is upside down. Does not work-- Check Wiring/ Verify Continuity/ Replace Switch

Bad Emergency Stop Switch (ESS)

M. Check voltage after the (ESS) MAKE SURE SWITCH IS PULLED UP!

Measure 120 Volts AC from (ESS) term 2 to Term Block 4(Blue)
Yes--Go to Step **N.** next
No--Check wire for continuity, then verify switch continuity. If bad replace ESS contactor (NC)

Bad System Start Switch (SSS)

N. Hold in SSS and Check voltage after the (SSS)

Measure 120 Volts AC from (SSS) term 3 to Term Block 4(Blue)
Yes--Go to Step **O.** next
No--Check wire for continuity, then verify switch continuity. If bad replace SSS contactor (NO)

Low Voltage Relay (REL) not operating

O. Hold in SSS and Check voltage at LVR. LVR must be installed in 8-pin socket.

Measure 120 Volts AC from LVR term 8 to Term Block 4(Blue)
Yes--Go to Step **P.** next
No--Check for 120 Volts AC from LVR term 6 to term 7.
Yes--Verify Continuity of term 1 to term 8 on LVR. Replace LVR if bad.
No--Verify Continuity of Wires.

Bad Main Contactor (MAG)

P. Hold in SSS and Check voltage at MAG A1 & A2.

Measure 120 Volts AC from MAG Term A1 to Term A2
Yes--MAG Should pull in with clunk, if not replace MAG.
No--Verify Continuity of Wires.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Machine Shuts off when you turn on Grind motor switch or Spin Motor Switch.

Possible Cause

Checkout Procedure

Guard Doors are Open

A. Close the front doors and rear door (and rear ramp - lift model)

Machine works
Yes--end troubleshooting
No--go to Step **B.** next

Door Safety Switches are not working properly

B. Check Alignment of Door Safety Switches on front doors and rear door (and rear ramp - lift model)

See Alignment section of this Manual.
Machine works
Yes--end troubleshooting
No--go to Step **C.** next

No 24 Volts DC to Safety Monitor (SSM)

C. Check SSM for 24 Volts DC. (Turn switches off and press start switch to pull in MAG before testing voltages)

Measure 24 volts DC from SSM Terminal A1+ to Terminal A2-
Yes--Go to Step **E.** next.
No--Go to Step **D.** next.

No Power into 24 Volt DC Power Supply (PWR)

D. Check PWR for 120 Volts AC. (Turn switches off and press start switch to pull in MAG before testing voltages)

Measure 120 volts AC from PWR Terminal L to Terminal N
Yes--Verify 24 VDC out of PWR (V+ to V-). Replace if no Voltage out; or Check Wiring & Verify Continuity to SSM if there is 24 VDC.
No--Verify Wiring and Continuity from PWR to terminal blocks.

No Power Out to Door Switches

E. Verify 24Volts DC out to Door Switches.

Measure approximately 24 volts DC from Terminal Strip 1 Terminal 17 to Terminal Strip 2 Terminal 3
Yes--Go to Step **F.** next.
No--Verify Continuity of Wires to Terminal strip, Replace SSM if wires check OK.

Rear Door Switch or Rear Ramp Switch is Bad

F. With Rear Door closed or Rear Ramp Closed Verify 24Volts DC back form rear Door Switch.

Measure approximately 24 volts DC from Terminal Strip 2 Terminal 3 to Terminal Strip 1 Terminals 14 and 15.
Yes--Go to Step **G.** next.
No--Check Alingment of Rear door switch. If no Voltage to Term14 or 15 then replace rear switch. If still not working replace cord.

Front Door Switch is Bad

G. With Front doors Closed Verify 24Volts DC back form Front Door Switch.

Measure approximately 24 volts DC from Terminal Strip 1 Terminal 17 to Terminal Strip 2 Terminals 2 and 4.
Yes--Replace SSM
No--Check Alingment of Front door switch. If no Voltage to Term2 or 4 then replace front switch.

PROBLEM--(MAG) turns on only with System Start Switch held in.

Possible Cause

Checkout Procedure

(MAG) holding contact has failed

A. Check wiring to and from MAG holding contact in. Verify the magnetic starter holding contact is working.

Measure 120 Volts AC at MAG term L3 to Term Block 4(Blue) after SSS is pushed.
Yes--Verify Wiring to LVR
No--Measure 120 Volts AC at MAG term T3 to Term Block 4(Blue) after SSS is pushed. If 120 Volts AC Replace MAG. If no 120 Volts AC verify wiring to T3.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--SPIN DRIVE NOT WORKING IN SPIN MODE.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on page 76 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or not loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Spin Speed Pot (SSP) set to zero	A. Set (SSP) to 200 on the control panel.	Spin Motor works Yes--end troubleshooting No--go to Step B next
Spin Motor Switch (SMS) is not on	B. Turn (SMS) switch on	Spin Motor works Yes--end troubleshooting No--go to Step C. next
Spin Rotation Switch (SRS) is not on	B. Turn (SRS) switch to direction of reel rotation required. NOTE: CENTER POSITION IS OFF	Spin Motor works Yes--end troubleshooting No--go to Step C. next
Circuit Breaker is Tripped (4 AMP)	C. Reset Circuit Breaker on the side of the machine above the electrical panel cover. Push in if tripped.	Spin Motor works Yes--end troubleshooting No--go to Step D. next
Spin Drive Control (SDS) is not working	D. Check (SDS) L1 to L2 for 120 Volts AC	(SDC) Term L1 to term L2 for 120 volts AC Yes--go to Step E. next No--Verify Power to Circuit Breaker and SMS and continuity of wires. Replace CB or SMS if needed.
	E. Check (SDC) A1 & A2 for approx. 90 Volts DC (Have Spin Speed Pot set to 400 RPM)	(SDC) Term A1 to A2 for approx 90 volts DC Yes--go to Step F. next No--go to Step L. next
	F. Check for approx 90 Volts DC input to (SRS)	(SRS) Term 2 to 3 for approx 90 Volts DC Yes--go to Step G. next No--replace wires 13 & 14
	G. Check for approx 90 Volts DC out put from (SRS).	(SRS) Term 6 to 7 for approx 90 Volts DC Yes--go to Step H. next No--replace (SRS) switch
Spin Drive motor is bad	H. Check spin motor continuity  Disconnect Power from Machine!	Remove wires at Terminal Strip 1, Term 4 & 5 check 0 ohms across the black and white wires Yes--end troubleshooting, motor should work (if it does not, replace motor) No--go to Step P. next

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause

Checkout Procedure

Spin Speed Pot (SSP)
is not working

L. Check (SSP) (10K) on
control panel

On (SDC), Remote Speed check Black
wire H terminal to Red wire W terminal for:
Pot Full CCW --0 volts DC
Pot Full CW--4.4 Volts DC
Check White wire L terminal to Red wire
W terminal for:
Pot Full CCW --4.4 Volts DC
Pot Full CW-- DC 0 Volts DC
Yes--Go to Step M
No--Go to Step N.

Spin Torque Pot (STP)
is not set correctly

M. Check (STP) remote
torque on the top (SDC)
board

(STP) on (SDC) remote torque should be
set at 2:00 o'clock position. See Pages 24
and 25. Adjust if incorrect and check Spin
Drive Function.
Yes--end of troubleshooting
No--Replace (SDC)

(SSP) is not working

N. (SSP) (10K) Remove 3
Remote Speed wires.
Red wire to term W
White wire to term L
Black wire to term H

Check for 10,000 ohms
Red wire to white wire
Full CCW--0 ohms
Full CW--10,000 ohms
Red wire to black wire
Full CCW--10,000 ohms
Full CW--0 ohms
Yes--replace (SDC)
No--replace (SSP)

Worn Motor Brushes

P. Inspect Motor Brushes



**DISCONNECT POWER
FROM MACHINE !**

Remove the brushes one at a time and
maintain orientation for reinsertion. See if
brush is worn short 3/8" (10 mm) minimum
length.
Yes--replace motor brushes
No--replace Spin Drive Motor

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Spin Drive not working in relief mode.

Assuming (SSS) System Start Switch is on with 115 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on page 76 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Relief Torque Pot (RTP) set to zero

A. Set (RTP) to 20 on the control panel.

Spin Motor works
Yes--end troubleshooting
No--go to Step B. next

Spin Motor Switch (SMS) is not on

B. Turn (SMS) switch on

Spin Motor works
Yes--end troubleshooting
No--go to Step C. next

Spin Rotation Switch (SRS) is not on

C. Turn (SRS) switch to direction of reel rotation required. **NOTE: CENTER POSITION IS OFF**

Spin Motor works
Yes--end troubleshooting
No--go to step D. next

Circuit Breaker is Tripped (4 AMP)

D. Reset Circuit Breaker on the side of the grinder above the control cover. Push in if tripped.

Spin Motor works
Yes--end troubleshooting
No--go to step E. next

Spin Drive Control (SDS) is not working

E. Check (SDS) L1 to L2 for 120 Volts AC

(SDC) Term L1 to term L2 for 120 Volts AC
Yes--go to Step F. next
No--Verify Power to Circuit Breaker and SMS and continuity of wires. Replace CB or SMS if needed.

F. Check (SDC) A1 & A2 for approx. 20 Volts DC (Have Relief Torque set to Red Line)

(SDC) Term A1 to A2 for approx 20 Volts DC
Yes--go to Step G. next
No--go to Step L. next

G. Check for approx 20 Volts DC input to (SRS)

(SRS) Term 2 to 3 for approx 20 Volts DC
Yes--go to Step H. next
No--replace wires 13 & 14

H. Check for approx 20 Volts DC out put from (SRS).

(SRS) Term 6 to 7 for approx 20 Volts DC
Yes--go to Step I. next
No--replace (SRS) switch

Spin Drive motor is bad

I. Check spin motor continuity

Remove wires at Terminal Strip 1, Term 4 & 5 check 0 ohms across the black and white wires
Yes--end troubleshooting, motor should work (if it does not, replace motor)
No--go to Step P. next



DISCONNECT POWER FROM THE MACHINE

Possible Cause**Checkout Procedure**

(RTP) Relief Torque Pot is not working

L. Check (RTP) (50K) on control panel (check voltage with pots at fully clockwise and counterclockwise positions)

On (SDC), Remote Torque check Black wire H Terminal Red wire W terminal for:
Pot CCW-- 0 volts DC
Pot CW-- .2 Volts DC
Ceck White wire L terminal to Red wire W terminal for:
Pot CCW-- .2 Volts DC
Pot CW-- DC 0 Volts DC
Yes--go to Step **M.** next
No--go to Step **N.** next

Relief Speed Pot (RSP) is not set correctly.

M. Check (RSP) remote speed (10k) on (SDC) top board (this is preset to 9:30)

(RSP) to the top (SDC) board should be set at 9:30. See pages 24 and 25. Adjust if incorrect and check Relief Torque function.
Yes--end of troubleshooting
No--replace (SDC)

(RTP) is not working

N. (RTP) (50K) Remove 3 Remote Torque Wires
red wire to term W
white wire to term L.
black wire to term H.

Check for 50,000 ohms
Red wire to white wire
Full CCW--0 ohms
Full CW--50,000 ohms
Red wire to black wire
Full CCW--50,000 ohms
Full CW--0 ohms
Yes--Replace (SDC)
No--replace (RTP)

Worn Motor Brushes

P. Inspect Motor Brushes



**DISCONNECT POWER
FROM MACHINE !**

Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short 3/8" (10 mm) minimum length
Yes--replace motor brushes
No--replace Spin Drive Motor

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM : Spin drive speed goes at one speed only.

Possible Cause

Remedy

Wiring hookup to potentiometer is improper. (If components have been replaced)

A. Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram

If wiring is wrong, correct and test.
Yes--end of troubleshooting
No--Go to Step B. next

Defective spin speed control (SSP) potentiometer.

B. (SSP) 10K Remove 3 remote speed wires.
red wire to term W
white wire to term L
black wire to term H

Check for 10,000 ohms
Red wire to white wire
Full CCW--0 ohms
Full CW--10,000 ohms
Red wire to black wire
Full CCW--10,000 ohms
Full CW--0 ohms
Yes-- Go to Step C. next
No--Replace (SSP)

Main circuit board dial pot settings not correct. (If board has been replaced)

C. Check all pot settings on both boards as of the (SDC) shown on Pages 24 and 25. (See Adjustment Section Spin Drive Control [SDC] Board Setting).

Yes-- end of troubleshooting
No--replace (SDC)

IR Comp trim pot not adjusted properly.

A. See adjustment section for trim pot setting on Page 24.

Original adjustment was not set properly

Torque to rotate the reel too high.

B. Readjust bearing preload for the reel. Maximum torque load 25 in./lb to rotate reel.

Too much load on drive motor will cause motor to hunt and vary speed.

Check all terminal connections for tightness.

C. When .250 female spade terminals are not tight, remove and crimp slightly together. When reinstalling, push on pressure should have increased for good contact.

When connections are not tight the control board varies voltage to the DC motor which then varies speed.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM-- Grinding motor not working.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on page 76 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Possible Cause

Grinding Motor Switch (GMS) is not on	A. Turn switch on	Grinding Motor works Yes--end troubleshooting No--go to Step B. next
Guard doors are not closed	B. Close front and rear guard doors (and rear ramp - lift option)	Grinding Motor works Yes--end troubleshooting No--go to Step C. next
15 Amp Circuit Breaker (CB) is tripped	C. Check 15 amp CB on the side of the grinder above the control cover. Press in if tripped.	Grinding Motor works Yes--end troubleshooting No--go to Step D. next
GMS not working	D. Check for power to GMS	GMS term 5 to Terminal Block 9 (Blue) for 120 Volts AC Yes--go to Step E. next No--With power off, check continuity of wires to GMS.
	E. Check for power from GMS	GMS Term 6 to Terminal Block 4 (Blue) for 120 Volts AC Yes--Go to Step F. next No--replace GMS
Grinding Motor Relay not working	F. Check for power to relay Coil (Relay should click when GMS is turned on.)	Check for 120 Volts (AC) from A1 to A2 of Grinding motor Relay. Yes--Go to Step G. next No-- check continuity of wires to Grinding motor Relay.
No Power to Relay Contacts	G. Verify Power to Relay Contacts	(REL) Term L1 to Term L2 for 120 Volts (AC) Yes--Go to Step H. next No--Check wires to REL Term L1 & L2

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
Bad Contacts in Grinding motor Relay	H. Verify power out of Grinding Motor Relay.	(REL) Term T1 to Term T2 for 120 Volts (AC) Yes--Go to Step I. next No--Replace Gringing Motor Relay
Bad Circuit Breaker	I. Verify Power out of Circuit Breaker.	Check for 120 Volts (AC) from terminals TB2-6 to Terminal Block 4 (Blue) Yes--Go to Step J. next No--Check circuit breaker for continuity. Verify wiring and replace if needed.
Bad Grinding Motor	J. Verify Power to Grinding motor Cord.	Verify wiring at terminals 1, 2 & 3 on Terminal Strip 1. Check TB1-1 to TB1-2 for 120 Volts (AC). Yes-- Check terminals on motor cord. If tight replace motor. No-- Check wires from Grinding Motor Relay and Circuit Breaker to Terminal Strip 1.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Traverse Drive not working.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on page 76 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Traverse Motor Switch (TMS) is not on	A. Turn on (TMS)	Traverse works Yes--end troubleshooting No--got to Step B. next
Traverse Speed Pot (TSP) set to zero	B. Set (TSP) to 35 on the control panel	Traverse works Yes--end troubleshooting No--go to Step C. next
Fuse on Traverse Drive Control (TDC) has failed	C. Check fuse and replace if failed. See Page 23. Too heavy a grind causes grinding head traverse motor to overload and blow the fuse, NOTE: Fuse can not be checked visually. Use Ohm test to check fuse. If the fuse needs replacing you MUST use a 3 amp slo-blo fuse . Part Number 3707546.	Traverse works Yes--end troubleshooting No--go to Step D. next
Traverse Drive Control (TDC) is bad	D. Check for 120 Volts (AC) incoming to (TDC)	On (TDC) Terminal L1 to L2 for 120 Volts AC Yes--Go to Step F. next No--Go to Step E. next
Bad Traverse Motor Switch (TMS)	E. Check for 120 Volts AC at (TMS). (Make certain (TMS) is on)	Measure 120 volts AC from TMS Terminal 5 to Term Block 4(Blue) Yes--Go to Step L. next. No--Flip Switch and check again- Works--Switch is upside down. Does not work-- Check wiring/Verify Continuity/ Replace Switch

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause

Checkout Procedure

No DC Voltage from (TDC) Traverse Drive Control

F. Check for 90 Volts DC across (TDC) terminals #A1 to #A2 this voltage drives the DC traverse motor. NOTE: Traverse must be on and have (TSP) turned full CW to maximum voltage of 90 VDC

Check (TDC) terminals #A1 to #A2 for 90 Volts DC

Yes--go to Step **G.** next

No--go to Step **H.** next

Traverse Motor is bad

G. Check traverse motor continuity



DISCONNECT POWER FROM MACHINE

Remove motor wires from Terminal Strip 1 terminals #7 & #8 check for 0 ohms across the black and white wires

Yes--end troubleshooting, motor should work (if it does not, replace motor)

No--go to Step **K.** next

(TSP) is not working

H. Check (TSP) (10K) on control panel

(TDC) Pin #8 to #7

Pot Full CCW	Pot Full CW
0VDC	9.75 VDC

Pin #8 to 9

Pot Full CCW	Pot Full CW
9.75 VDC	0 VDC

Yes--replace the (TDC)

No--go to Step **J.** next

(TSP) (10K) is bad

J. Check (TSP) for 10,000 ohms. Remove three wires from (TDC) red from term #8 white from term #7 black from term #9

Check for 10,000 ohms red to white wires

Full CCW--0 ohms

Full CW--10,000 ohms

Red to black wires

Full CCW--10,000 ohms

Full CW--0 ohms

Yes--replace the (TDC)

No--replace (TSP)

Worn motor brushes

K. Inspect Motor Brushes



DISCONNECT POWER FROM MACHINE

Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short, 3/8" (10 mm) minimum length.

Yes--replace motor brushes

No--replace Traverse Motor

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Traverse does not stop to reverse directions when flag goes under the proximity switch on the left side or right side of machine.

Gap between flag and prox is incorrect.

A. Gap between flag and prox should be 3/16 to 1/4" (4-6 mm). Prox LED does not light when flag is under prox.

If incorrect, adjust per adjustment section of manual.

Yes--end troubleshooting

No--go to Step B. next

Proximity Switch is bad.

B. Proximity switch is not working properly or wire connections are loose.

First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.

The light coming on shows the proximity is getting electrical contact.

Left proximity (PROX 1) check Traverse drive Control (TDC) between terminals #13 (black wire) and #15 (brown wire).

Proximity light on-
0 Volts DC
Proximity light off-
12 Volts DC

Right proximity (PROX) check #14 (black wire) and #15 (brown wire).

Proximity light on-
0 Volts DC
Proximity light off-
12 Volts DC

Replace proximity switch if the voltages do not read as above.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Traverse speed control goes at one speed only.

Possible Cause

Checkout Procedure

Defective speed control potentiometer

A. Check potentiometer on control panel.

Traverse Drive Control Pin #8 to 7
 Pot full CCW Pot Full CW
 0 VDC 9.75 VDC
 Pin #8 to 9
 Pot full CCW Pot Full CW
 9.75 VDC 0 VDC
 Yes--Pot is OK
 No--Go to Step **B.** next

B. Check potentiometer for 10,000 ohms.
 Remove three wires from Traverse Drive Control
 red from term #8
 white from term #7
 black from term #9

Check for 10,000 ohms
 Red to White wires
 Full CCW - 0 ohms
 Full CW - 10,000 ohms
 Red to Black wires
 Full CCW - 10,000 ohms
 Full CW - 0 ohms
 Yes--Go to Step **C.** next
 No--replace potentiometer.
 Wiper inside of potentiometer controls speed. Wiper may be bad and not making contact.

Wiring hookup to potentiometer is improper.
 (If components have been replaced.)

C. Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram

Verify potentiometer White wire to terminal 7, Red wire to terminal 8 and Black wire to terminal 9, if not, correct.
 Check for Proper function.
 Yes--end troubleshooting
 No--Go to Step **D.** next

Minimum and maximum pot settings effect traverse speed.

Main circuit board dial pot settings not correct.
 (If board has not been replaced.)

D. Check all pot settings on circuit board as shown in wiring diagram.
 (See adjustment section Traverse Motor Control Board Settings.)

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--If the carriage traverses to one end of stroke or the other and it stops and does not reverse direction.

Possible Cause	Remedy	Reason
Proximity switch is not working properly or wire connections are loose	First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.	The light coming on shows the proximity is getting electrical contact.
	Left proximity (PROX1) check Traverse drive Control (TDC) between terminals #14 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
	Right proximity (PROX) check (TDC) between terminals #13 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
		Replace proximity switch if the voltages do not read as above.

PROBLEM--Insufficient hesitation at carriage stops prior to reversing traverse.

The dwell time on the traverse drive control not set properly.	Reset dwell time as required. One increment increases Dwell time by 1/2 second.
--	---

PROBLEM--Traverse changes directions erratically while running in traverse cycle.

Loose wire to proximity switch.	Check wire connections from the proximity switches and tighten down screws.	A loose wire connection will give intermittent electrical contact.
---------------------------------	---	--

MECHANICAL TROUBLESHOOTING

PROBLEM-- Excessive noise or vibration on one end of the machine.

Possible Cause

Set screws on bearings are not tight on grinding shaft.

Checkout Procedure

Tighten set screws located on bearings (#80336)

PROBLEM--Grinding wheel traverse binding.

Possible Cause

Shafts are dirty.

Checkout Procedure

Clean the shafts as specified in the maintenance section of this manual.

Grinding shaft is at a severe angle.

Raise or lower one end of the shaft until approximately level. This grinder is not designed to operate at a severe angle. Adjust reel or setup until the shaft is approximately level.

PROBLEM-- Handwheel or vertical indicator gage "walks" during grinding.

Possible Cause

Bracket connecting gage to vertical adjuster is loose.

Checkout Procedure

Push lightly up and down on the digital gage to see if it is loose. Tighten the screws on the bracket to the vertical adjuster or remove the gage and tighten the screws from the bracket to the gage.

Plug and set screw loose.

Tighten the drag on the vertical shafts by tightening the setscrew located on the back of the vertical adjuster housing. (See Vertical Infeed Shaft Drag in the adjustment section.)

PROBLEM--Reels ground have high/low blades

Possible Cause

Traverse Speed set too fast.

Checkout Procedure

Check roundness using the digital gage. Traverse speed should be set approximately 12 ft/min. (4 meters/min.) if roundness is varying.

MECHANICAL TROUBLESHOOTING (Continued)

PROBLEM-- Uneven traverse speed or grinding stock removal from reel is irregular.

Possible Cause

Linear bearings are damaged or have grit buildup causing uneven traversing load.

Grinding shaft or wheels have grit buildup causing uneven loading.

Left side traverse pulley is full of grit causing the pulley not to turn freely on shaft.

Checkout Procedure

Clean shafts and bearings according to the lubrication of Grinding Shaft and Linear Bearings instructions in the Maintenance Section of the manual. If problem persists replace linear bearings according to the replacement of linear bearings instructions.

Clean the wheel flanges and shaft (see Lubrication of Grinding Shaft). Replace flanges or shaft if necessary.

Clean and lubricate the shaft and pulley.

PROBLEM--Traverse Belt Slips

Possible Cause

Clamping tip is not adjusted properly.

Too heavy a grind for traverse speed.

Checkout Procedure

Adjust the clamping tip as specified in the Traverse Clamp Force section of this manual.

Slow the traverse speed or back off on the amount that is being infed.

PROBLEM-- Too heavy a burr on cutting edge of reel blades.

Possible Cause

Traverse speed set too high causing a heavy burr on the reel blade when spin grinding.

Checkout Procedure

Traverse speed should be set lower approximately 12 ft./min (4 meters/min.) for a smaller burr on the cutting edge.

PROBLEM--Cone shaped reel after grinding.

Possible Cause

Grinding head travel not parallel to the reel center shaft.

Checkout Procedure

Grinding head travel was not setup parallel to the reel center shaft in vertical and horizontal planes. See Align the Reel Section.

PROBLEM--Relief grind on the reel blades do not go the full length of the reel.

Possible Cause

Need to adjust the finger stop.

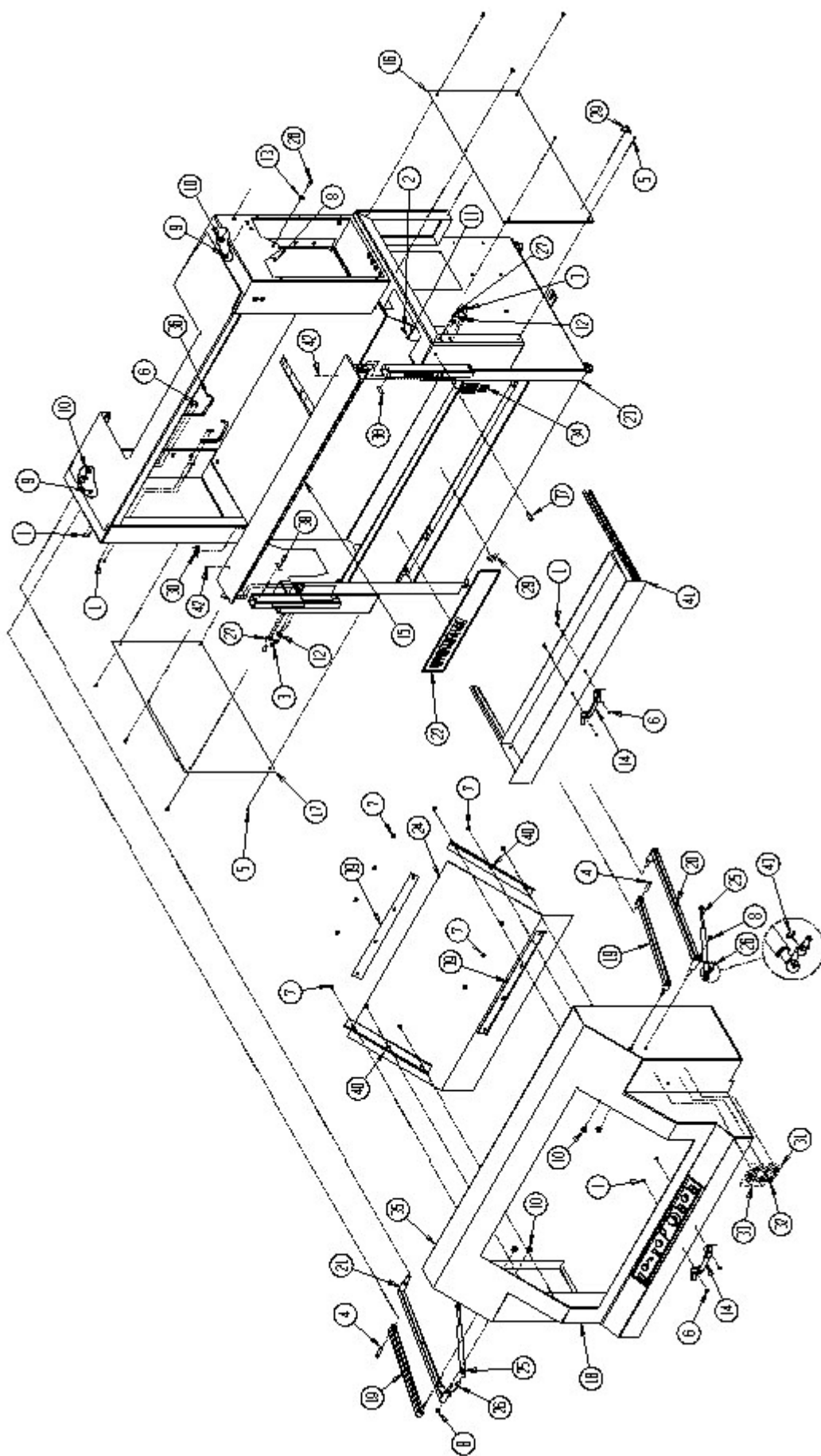
Need to dress the Wheel to the correct angle

Checkout Procedure

Adjust finger stop and check for contact full length.

Dress the wheel (For more detail, see relief grinding section in operating instructions of the manual.)

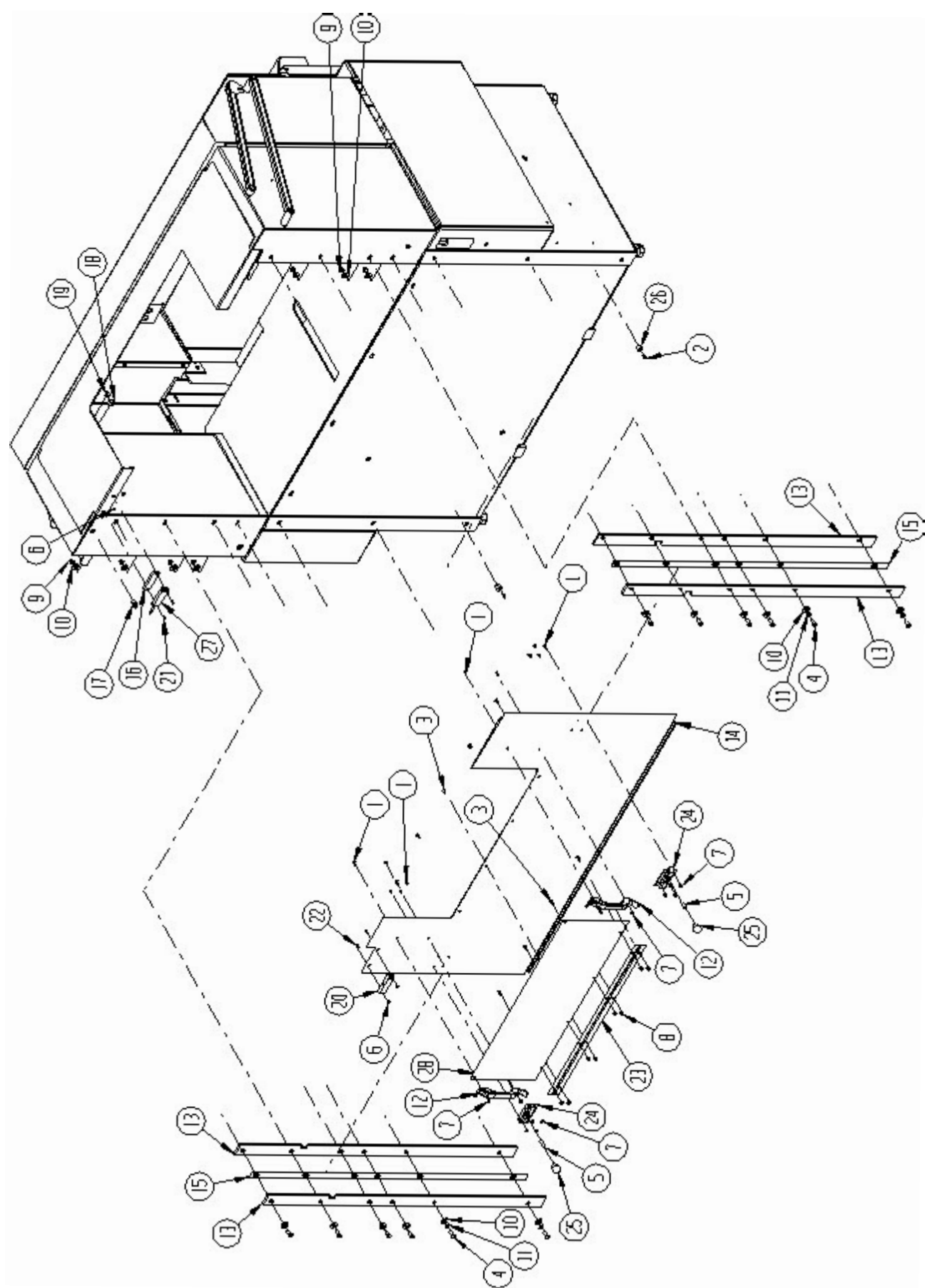
EXPLODED VIEW: 55453 CABINET AND DOOR ASSEMBLY



PARTS LIST: 55453 CABINET AND DOOR ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B191013	10-24 x 5/8 Button Head Socket Cap Screw
2	B251001	1/4-20 x 5/8 Hex Head Cap Screw
3	B371616	3/8-16 x 1.0 Button Head Socket Cap Screw
4	B373216	3/8-16 x 2 Button Head Socket Cap Screw
5	D280808	1/4-20 x 1/2 Thread Cutting Screw "F"
6	J197000	10-24 Locknut Jam Nylon Insert
7	J311000	5/16-18Hex Full Nut
8	J317000	5/16 Locknut Jam Nylon Insert
9	J377100	3/8-16 Locknut Full Nylon Insert
10	J507000	1/2-13 Locknut Jam Nylon Insert
11	K251501	1/4 Lockwasher Split
12	K370101	3/8 Flatwasher - Heavy
13	R000453	5/16 ID x 7/8 OD x 1/8 Thick Washer
14	09891	Grab Handle Enclosure
15	50234	Tooling Bar-Machined
16	55396	Side Cover Panel - Right Hand
17	50399	Side Cover Panel - Left Hand
18	55423	Door Weldment
19	55430	Arm Weldment - Short
20	55431	Arm Weldment - Long Right Hand
21	55433	Arm Weldment - Long Left Hand
22	55447	Neary 555 SRI Decal
23	55450	Cabinet Weldment
24	55465	Polycarbonate Window - Formed
25	80416	Air Spring
26	80418	Air Spring Stud
27	3708159	Spirol Pin .25 Dia. x .50 Long
28	3708378	Foam Strip .25 Thick (Sold per Foot)
29	3708458	Sharp Warning Decal
30	3708461	3600 RPM Warning Decal
31	3708605	Respirator Warning Decal
32	3708606	Hearing Protection Warning Decal
33	3708703	Safety Symbol Warning Decal
34	3708872	Patent Decal
35	3708889	Foam Seal .50 High (Sold per Foot)
36	3708890	Storage Hook
37	6309039	Gage Mounting Pin
38	6309111	Up/Down Decal
39	6509110	Window Retaining Bracket - Long
40	6509182	Window Retaining Bracket - Medium
41	55513	Dust Tray Weldment
42	H251202	.25 Diameter x 3/4" long Roll-Pin
43	80421	Retaining Clip - Gas Spring

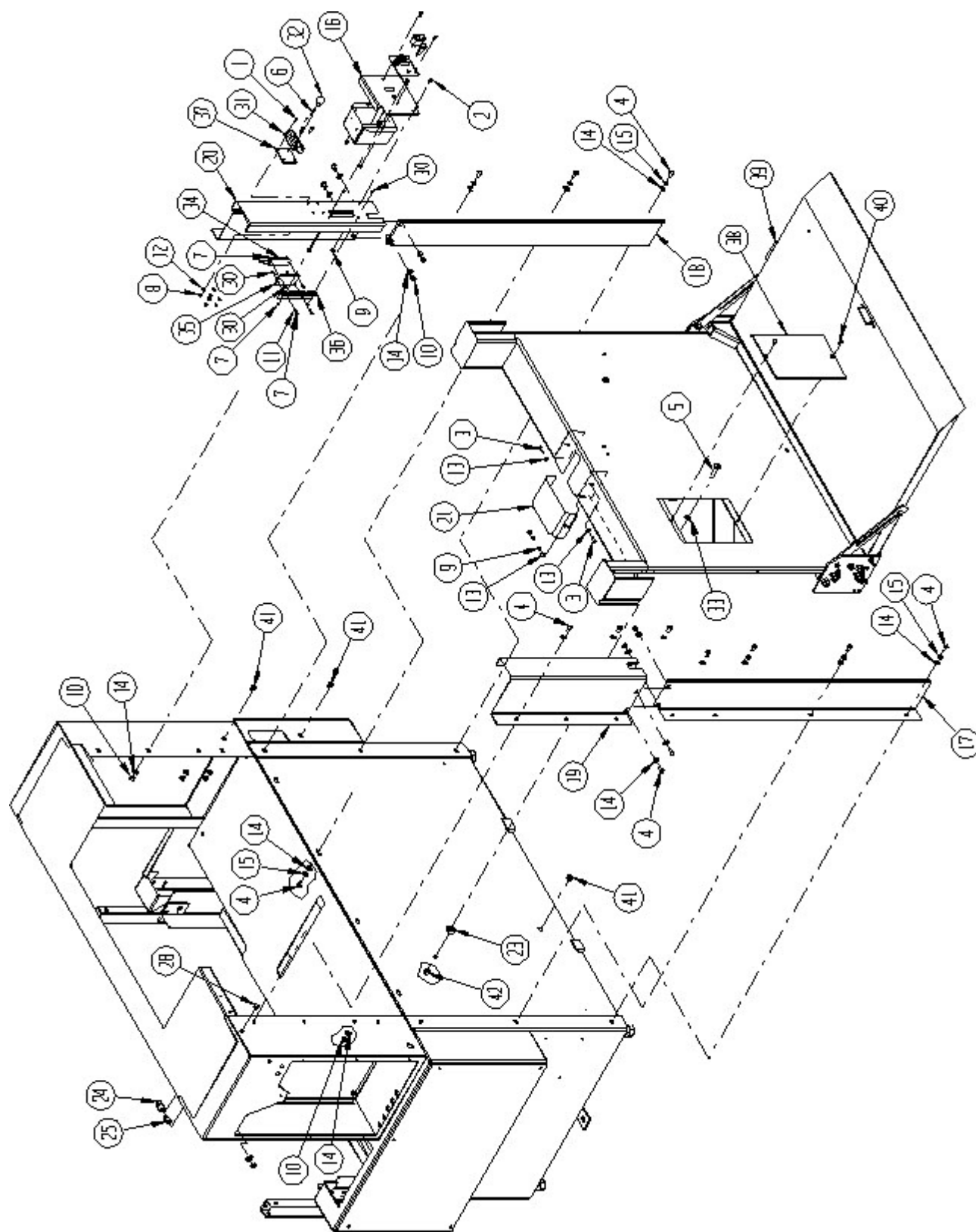
PARTS LIST: 55470 REAR DOOR ASSEMBLY



PARTS LIST: 55470 REAR DOOR ASSEMBLY

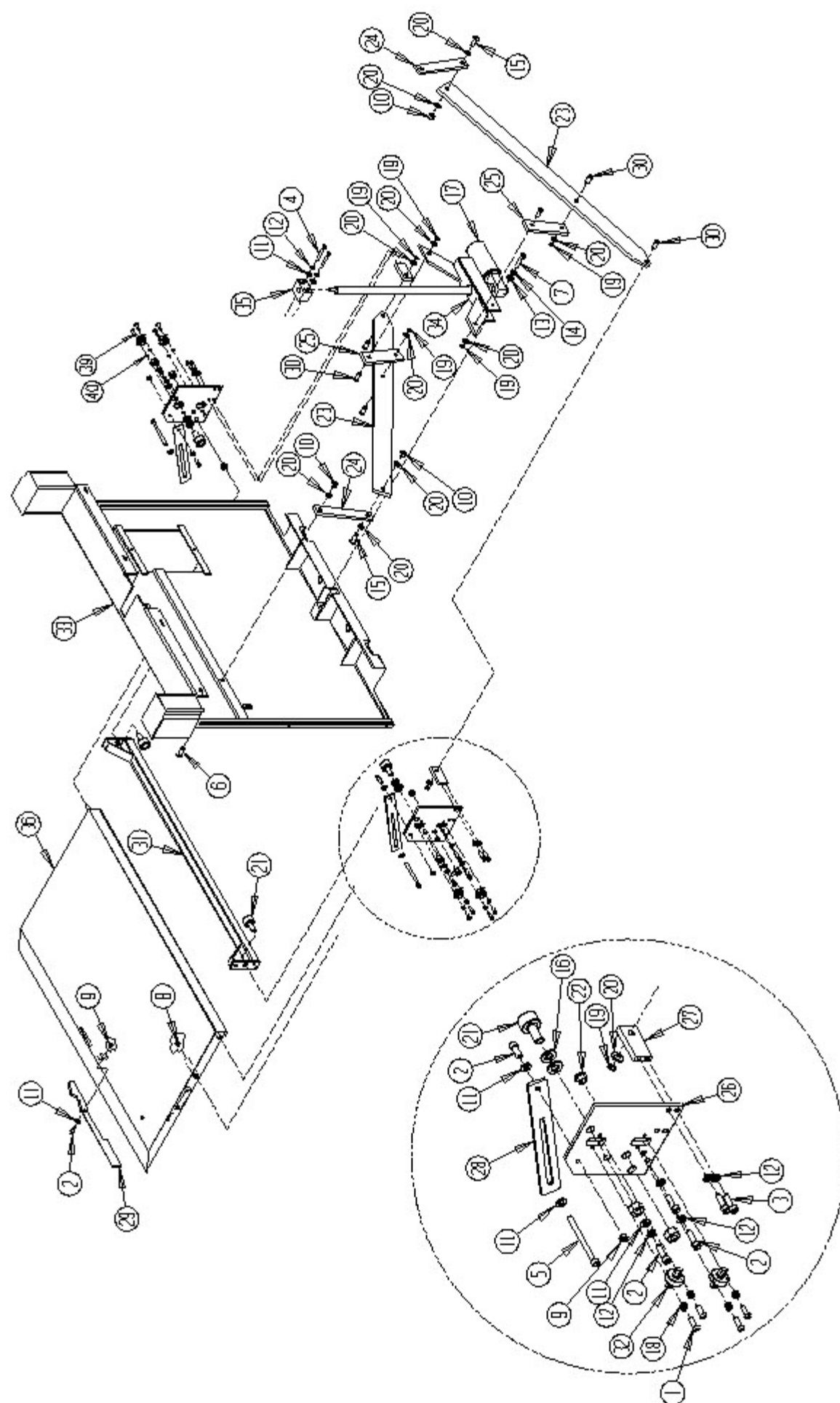
DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B190813	10-24 x 1/2 Button Head Socket Cap Screw
2	B191034	10-32 x 5/8 Button Head Socket Cap Screw
3	B250816	1/4-20 x 1/2 Button Head Socket Cap Screw
4	B372016	3/8-16 x 1.25 Button Head Socket Cap Screw
5	C312020	5/16-18 x 1.25 Socket Setscrew Cup Point
6	J167000	8-32 Locknut Jam Nylon Insert
7	J197000	10-24 Locknut Jam Nylon Insert
8	J257100	1/4-20 Locknut Full Nylon Insert
9	J377000	3/8-16 Locknut Jam Nylon Insert
10	K370001	Flatwasher 3/8
11	K371501	Lockwasher 3/8 Split
12	09891	Grab Handle
13	55467	Rear Door Slide
14	55468	Rear Guard Door
15	55469	Rear Door Spacer Plate
16	55471	Rear Safety Switch Spacer Plate
17	3707029	Strain Relief - Liquid Tight .19-.30 Cord
18	3707595	Hole Plug - .875 Dia.
19	3707597	Hole Plug - .625 Dia.
20	3707647	Door Safety Magnet - Coded
21	3708819	8-32 x .75 Button Head Safety Screw
22	3708820	8-32 x .50 Button Head Safety Screw
23	3708869	Spring Hinge
24	3708882	Spring Latch
25	3708887	Knob - 5/16-18 Female Oval
26	3709767	Rubber Bumper
27	6059021	Door Safety Switch Assembly - Rear
28	6329029	Walker Hinged Panel

PARTS LIST: 55466 LIFT COMPONENT ASSEMBLY



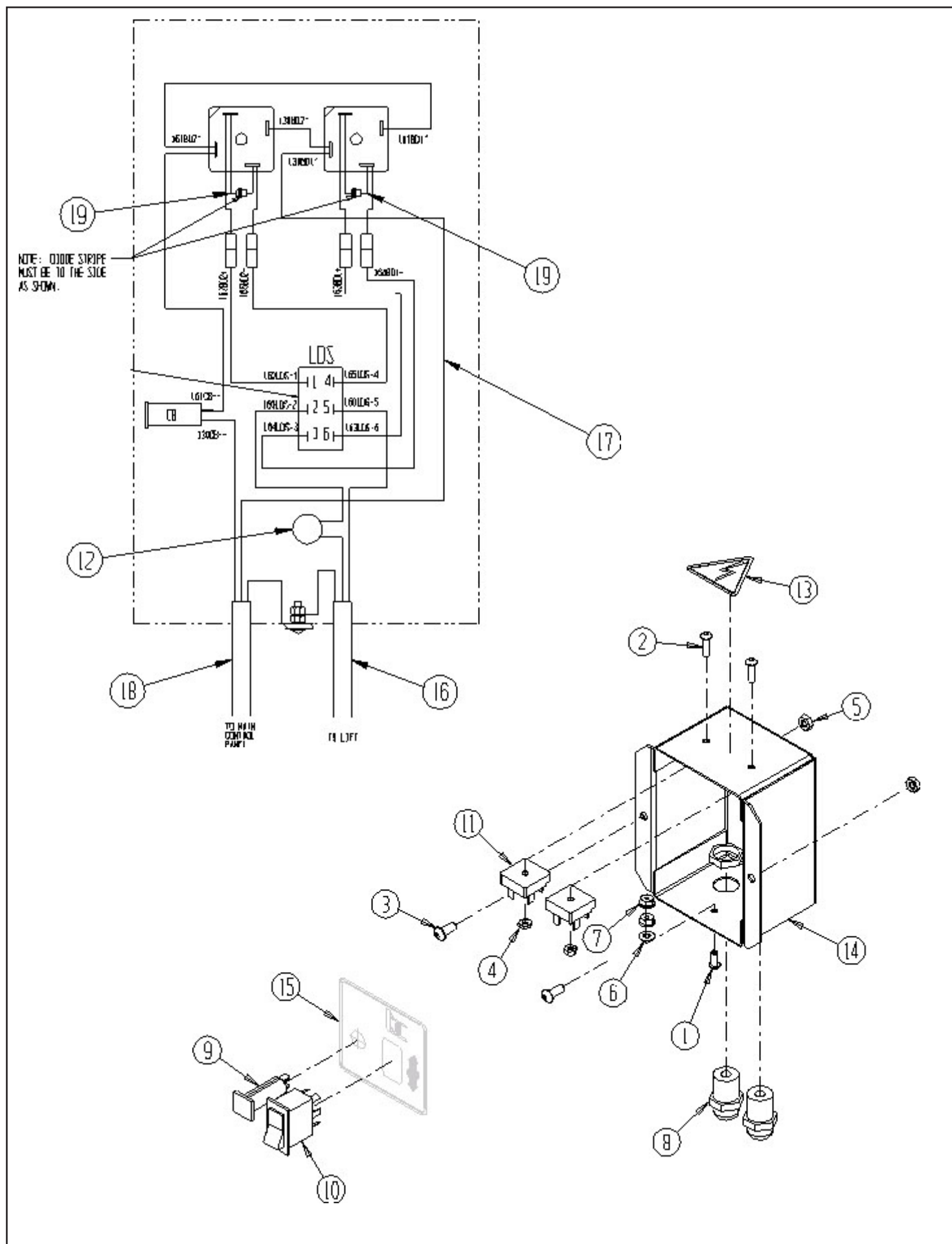
PARTS LIST: 55466 LIFT COMPONENT ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B191213	10-24 x 3/4 Button Head Socket Cap Screw
2	B250816	1/4-20 x 1/2 Button Head Socket Cap Screw
3	B251201	1/4-20 x 3/4 Hex Head Cap Screw
4	B371216	3/8-16 x 3/4 Button Head Socket Cap Screw
5	B503216	1/2-13 x 2.0 Button Head Socket Cap Screw
6	C311620	5/16-18 x 1.0 Socket Setscrew Cup Point
7	J167000	8-32 Locknut Jam Nylon Insert
8	J197000	10-24 Locknut Jam Nylon Insert
9	J257000	1/4-20 Locknut Jam Nylon Insert
10	J377100	3/8-16 Locknut Full Nylon Insert
11	K160001	Flatwasher No. 8
12	K190001	Flatwasher No. 10
13	K250001	Flatwasher 1/4"
14	K370001	Flatwasher 3/8"
15	K371501	Lockwasher 3/8 Split
16	55371	Lift Control Panel
17	55435	Lower Lift Guard - Right Hand
18	55436	Lower Lift Guard - Left Hand
19	55444	Upper Lift Guard - Right Hand
20	55445	Upper Lift Guard - Left Hand
21	55464	Lift Dust Shield
22	55475	Lift Power Cord (Not Shown)
23	2109096	Spacer .501 ID x 1.00 OD x .50 Long
24	3707009	Strain Relief - Liquid Tight .27-.47 Dia. Cord
25	3707029	Strain Relief - Liquid Tight .19-.30 Dia. Cord
26	3707224	Cable Tie Mount (Not Shown)
27	3707225	Cable Tie 6.5 Long x .18 Wide (Not Shown)
28	3707597	Hole Plug - .625 Dia.
29	3708458	Sharp Warning Decal (Not Shown)
30	3708820	8-32 x .50 Button Head Safety Screw
31	3708882	Spring Latch
32	3708887	Knob - 5/16-18 Female Oval
33	3709019	Thrust Washer .500 ID x .937 OD x .032 Thick
34	6059021	Door Safety Switch Assembly - Rear
35	6329083	Door Safety Switch Mounting Plate
36	6329084	Door Switch Mounting Plate
37	6329085	Latch Spacer Plate
38	6209100	Lift Access Panel
39	3707647	Door Safety Coded Magnet
40	B250805	1/4-20 x 1/2 Flat Head Cap Screw
41	3707273	Strain Relief
42	J507000	1/2-13 Locknut Nylon Insert



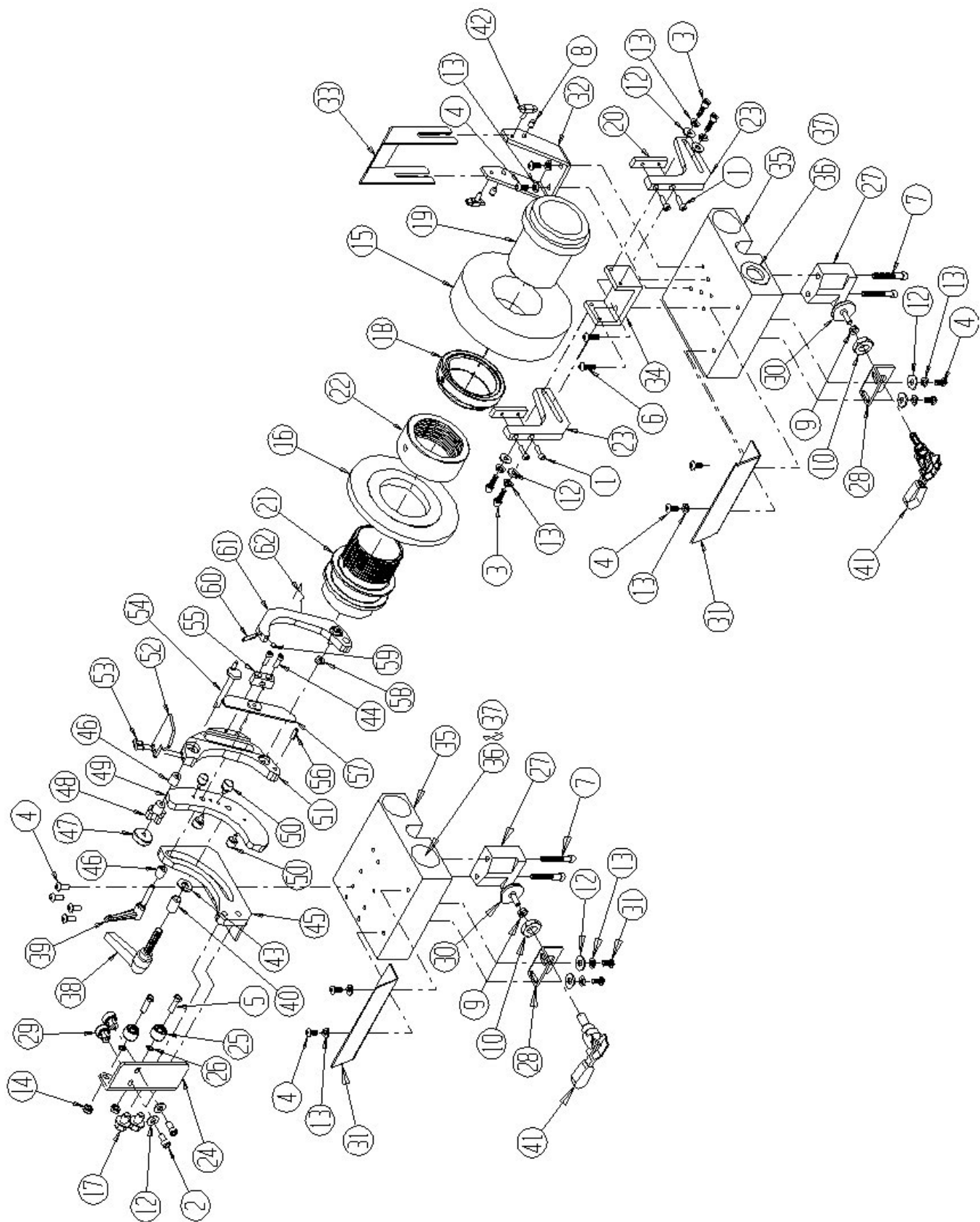
PARTS LIST: 6200970 REEL LIFT ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B190813	Button Head Cap Screw #10-24 x 1/2 Long
2	B371611	Socket Head Cap Screw 3/8-16 x 1 Long
3	B372011	Socket Head Cap Screw 3/8-16 x 1 1/4 Long
4	B374011	Socket Head Cap Screw 3/8-16 x 2 1/2 Long
5	B377211	Socket Head Cap Screw 3/8-16 x 4 1/2 Long
6	B502405	Flat Head Cap Screw 1/2-13 x 1 1/2 Long
7	B503211	Socket Head Cap Screw 1/2-13 x 2 Long
8	J377100	3/8-16 Nylon Locknut
9	J377000	3/8-16 Nylon Jam Locknut
10	J507000	1/2-13 Nylon Locknut
11	K370001	3/8 Flat Washer
12	K371501	3/8 Split Lockwasher
13	K500001	1/2 Flat Washer
14	K501501	1/2 Split Lockwasher
15	80048	Button Head Cap Screw
16	3599029	Flat Washer
17	3707373	Electro Mechanical Actuator
.....	3707663	Motor - Service Electro Mechanical Actuator
18	3708868	Compression Spring
19	3708870	External Snap Ring
20	3709019	Thrust Washer
21	3709700	Cam Follower
22	3709702	Flanged Bronze Bushing
23	6209070	Lift Long Arm
24	6209071	Lift Swing Arm
25	6209072	Lift Short Arm
26	6209073	Bearing Plate
27	6209074	Bearing Plate Arm Block
28	6209089	Ramp Support Strap
29	6209095	Anti-Rollback Plate
30	6209097	Pivot Pin
31	6209116	Lift Cross Support
32	6509507	Lift Bearing Assembly
33	6509570	Lift Frame Weldment
34	6509572	Load Carrier Weldment
35	6209573	Actuator Top Block Assembly
36	6209574	Ramp Weldment
37	3708456	Capacity Warning Decal (Not Shown)
38	6309036	Capacity Warning Decal - Text (Not Shown)
39	B311013	5/16-18 x 5/8 Button Head Socket Cap Screw
40	3589109	Flat Washer .315 ID x .50 OD x .035 Thick



<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B190813	Button Head Cap Screw #10-24 x 1/2 Long
2	B191213	Button Head Cap Screw #10-24 x 3/4 Long
3	B251016	Button Head Cap Screw 1/4-20 x 5/8 Long
4	J197000	#10-24 Nylon Jam Locknut
5	J257100	1/4-20 Nylon Locknut
6	R000483	#10 Lockwasher
7	R000553	#10-24 Kep Nut
8	3707009	Liquid Tight Strain Relief .27-.47 Wire
9	3707648	6-Amp Circuit Breaker
10	3707428	Rocker Switch Momentary on-off-on
11	3707526	25-Amp Bridge Diode
12	3707644	Thermistor Assembly
13	3708448	Electrical Warning Decal
14	6209101	Lift Electrical Control Box
15	6209102	Lift Control Decal
16	6209110	Lift Actuator Cord
17	6209111	Lift Controls Harness
18	6329082	Lift Power Cord
19	6309134	Diode Jumper Assembly

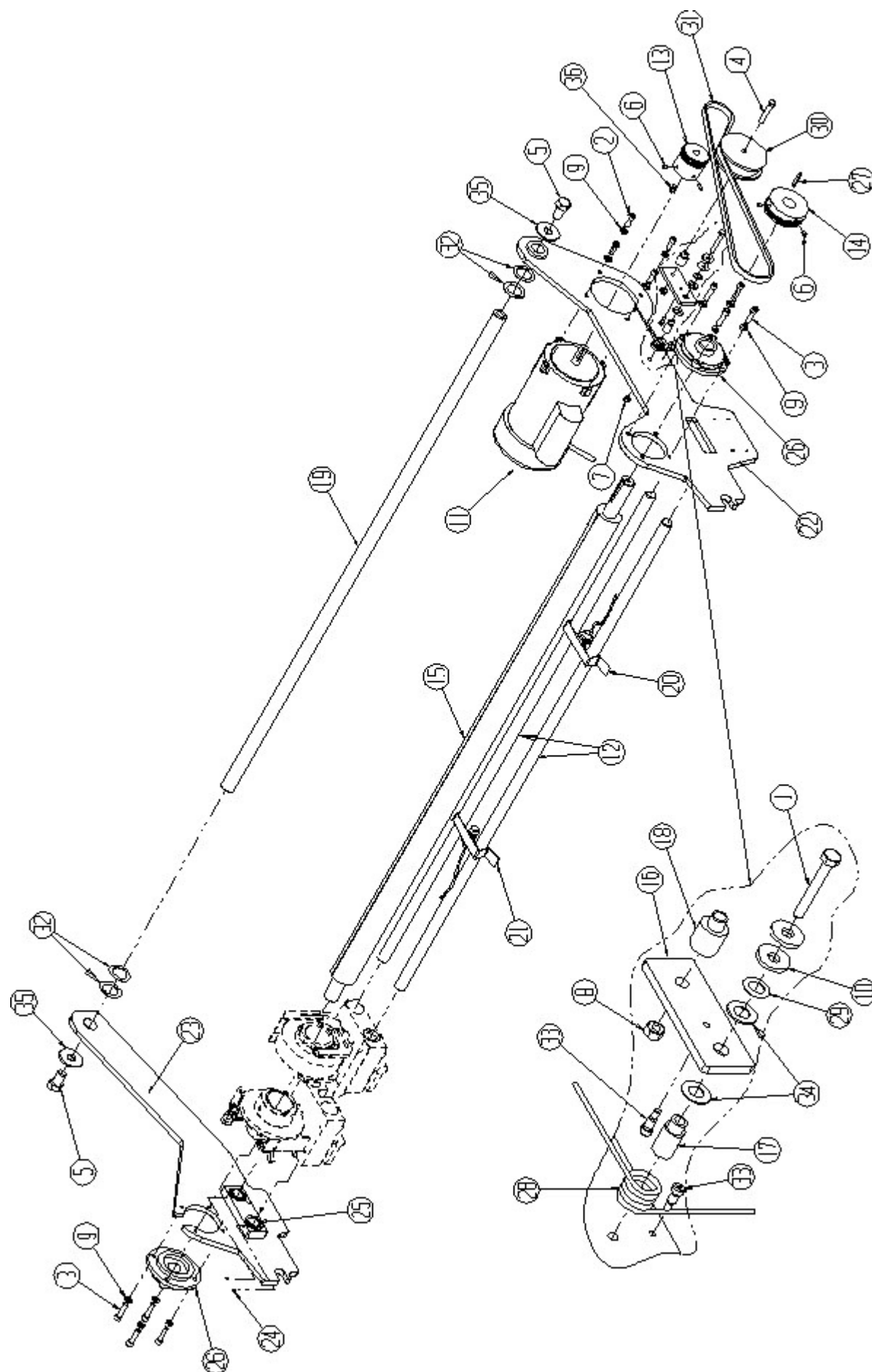
EXPLODED VIEW: 55583 GRINDING HEAD ASSEMBLY



PARTS LIST: 55583 GRINDING HEAD ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B191011	10-24 X 5/8 Socket Head Cap Screw
2	3708848	1/4-28 x 1/2 Socket Head Cap Screw w/ patch
3	B251211	1/4-20 x 3/4 Socket Head Cap Screw
4	B250816	1/4-20 x 1/2 Button Head Socket Cap Screw
5	80407	1/4-20 x 1.00 Socket HeadCap Screw - Low Head
6	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
7	B253211	1/4-20 x 2.00 Socket Head Cap Screw
8	H250802	Roll Pin .25D x .50 Lg
9	J252000	1/4-20 Hex Jam Nut
10	J627200	5/8-18 Locknut Jam Nylon
12	K250001	Flat Washer 1/4
13	K251501	1/4 Lockwasher Split
14	J257000	1/4-20 Locknut Jam Nylon
15	05720	Grinding Wheel 6 x 2.75B x 1.5W 46G
16	05731	Grinding Wheel 6 x 2.75B x .38W 24G Type 1
17	3708839	3/8-16 x 1/2 Screw w/locking Flange
18	50037	Spin Flange Nut
19	50039	Spin Wheel Flange
20	50073	Wear Pad
21	55200	Relief Wheel Flange
22	55201	Relief Flange Nut
23	50204	Spin Yoke
24	55126	Bearing Support Bracket
25	55280	Double Bearing Assembly
26	80406	Spacer washer
27	50297	Traverse Shoe
28	50298	Traverse Clamp Bracket
29	55296	Single Bearing Assembly
30	50310	Belt Clamp Tip
31	50320	Traverse Guard
32	50321	Shield Mount Bracket
33	50324	Spark Shield
34	50329	Spin Support
35	55582	Bearing Housing Assembly
36	09404	Linear Bearing
37	3709209	Oil Seal 1"ID x 1.57"OD x .187
38	3708561	Adjustable Handle 3/8-16 x 1.56 Long
39	3708835	Adjustable Handle 1/4-20 x 1.25 Long
40	27115	Spacer - .386 ID x .50 OD x .75 Long
41	80335	Destaco 602 Clamp
42	80337	T-knob Assembly
43	3589106	Washer
44	B191031	10-32 x 5/8 Socket Head Cap Screw
45	55119	Finger Rotate Base
46	6009057	Spacer .265 ID x .48 OD x .50 Long
47	55144	Knob - 1/4-20 x 1" Diameter
.....	C190360	10-32 x 3/16 Socket Head Set Screw
48	3708838	Star Knob - 1" Diameter
49	55112	Cam Plate
50	80392	Cam Follower - 1/2" Diameter
51	55113	Finger Slide
52	55117	Fixed Finger
53	B190634	10-32 x 3/8" Button Head Socket Cap Screw
54	55118	Stop Pin
55	55116	Index Finger Stop Block
56	H181202	3/16 x 3/4" long Roll Pin
57	55579	Locking Plate Weldment
58	3708833	Spacer - .252 ID x .50 OD x .125 Long
59	C190467	10-32 x 1/4" Socket Head Set screw
60	55127	3/16 Diameter Index Stop Pin
61	55581	Indexing Finger Assembly
62	3708107	Compression Spring

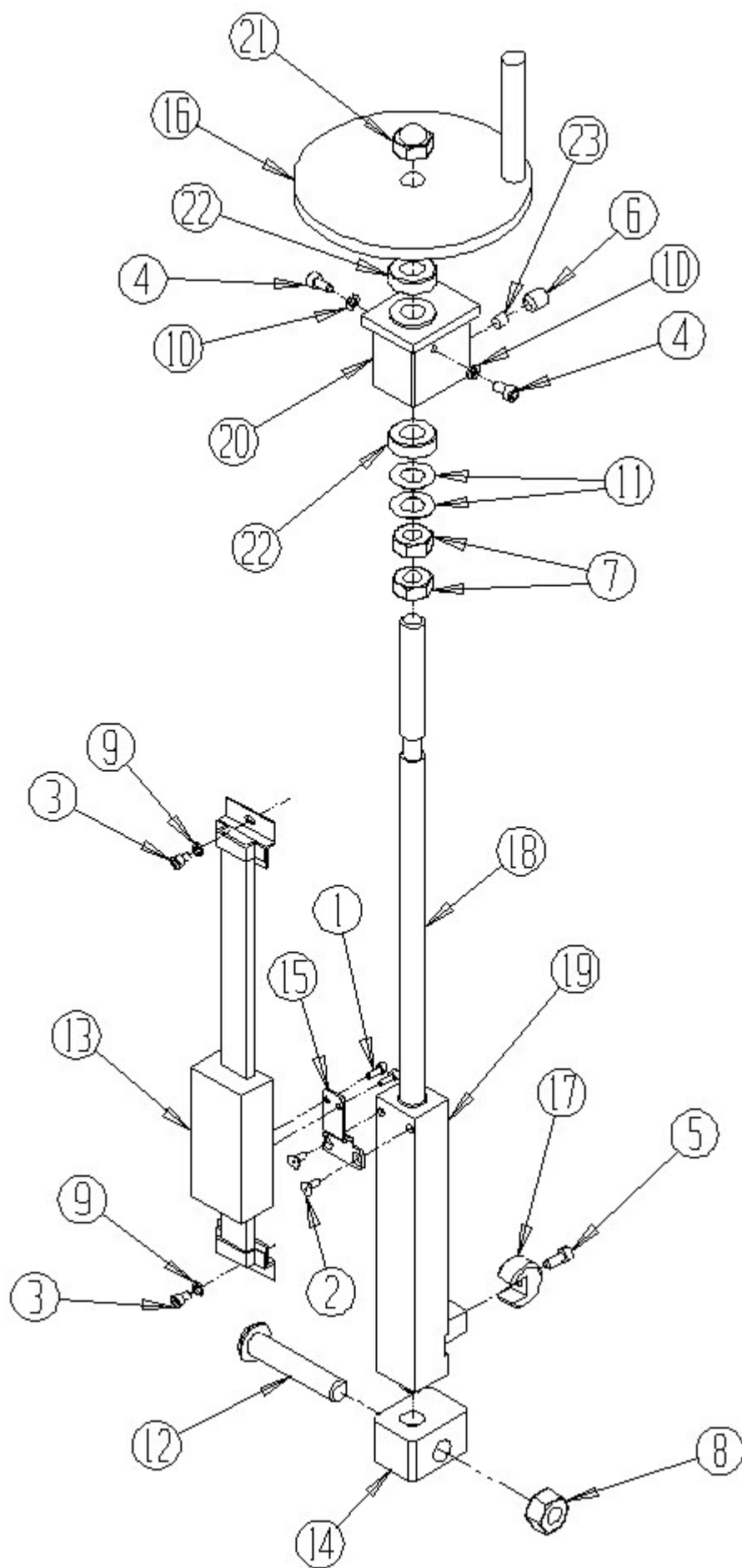
PARTS LIST: 55451 PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2



PARTS LIST: 55451 PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B313601	5/16-18 x 2-1/4 Hex Head Cap Screw
2	B371611	3/8-16 x 1 Socket Head Cap Screw
3	B372411	3/8-16 x 1-1/2 Socket Head Cap Screw
4	B373601	3/8-16 x 2-1/4 Hex Head Cap Screw
5	B752001	3/4-10 x 1.25 Hex Head Cap Screw
6	C250820	1/4-20 x 1/2 Cup Point Set Screw
7	J317000	5/16-18 Locknut Nylon Jam
8	J377100	3/8-16 Locknut Hex Nylok Full
9	K371501	3/8 Lockwasher Split
10	R000453	Flat Washer .31 x .88 x .104T
11	3707690	Motor 1HP
12	50235	Traverse Shaft
13	50236	Pulley 2.45 Diameter Poly V
14	50237	Pulley 3.72 Diameter Poly V
15	50256	Grinding Wheel Shaft
16	50279	Tensioner Bar
17	50280	Tensioner Pivot Shaft
18	50281	Tensioner Pulley Shaft
19	50282	Pivot Support Shaft
20	50311	Prox Switch Holder R.H.
21	50318	Prox Switch Holder L.H.
22	55404	Arm Assembly R.H.
23	55407	Arm Assembly L.H.
24	C190420	10-24 x 1/4 Cup Point Set Screw
25	09680	Torrington Bearing
26	80336	Piloted Bearing Flange
27	80338	Key .25 sq x 1.25 Lg
28	80342	Torsion Spring
29	80343	Conical Washer .539 x .862 x .014T
30	80349	Idler Pulley 4.0 Diameter
31	80350	Poly V Belt
32	80351	Conical Washer 1.40 x 2.03 x .024T
33	3708425	Shoulder Bolt .313 D x .375 L
34	3709019	Thrust Washer .500 x .937 x .032 T
35	3709886	Flat Washer .812 x 2.25 x .135 T
36	80126	Key 3/10 sq x 1.00 Lg

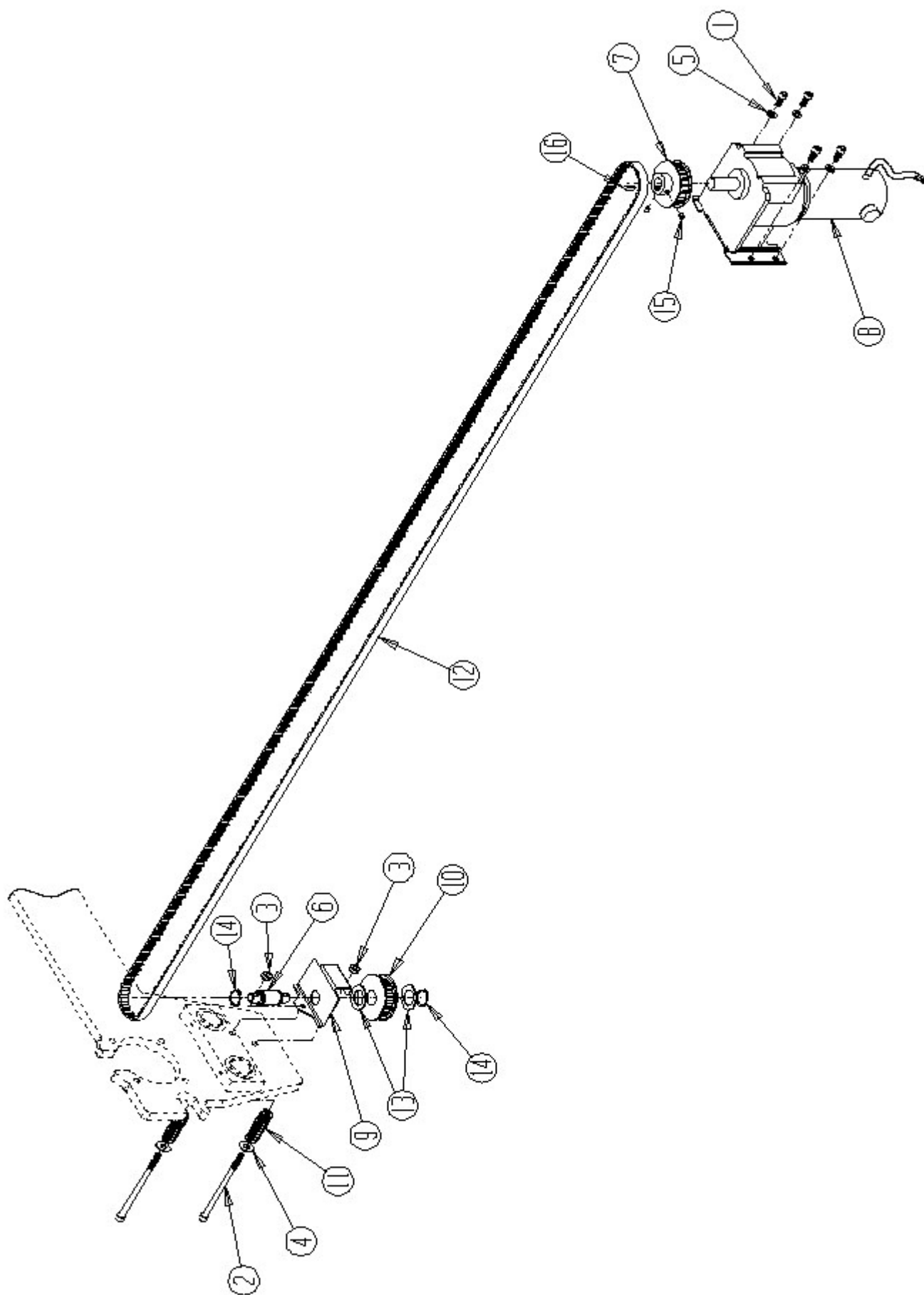
EXPLODED VIEW: 55451 PIVOT ARM AND GRINDING SHAFT ASSY 2 of 2



PARTS LIST: 55451 PIVOT ARM AND GRINDING SHAFT ASSY 2 of 2

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B120311	5-40 X .188 Lg Socket Head Cap Screw
2	B130605	6-32 x 3/8 Flat Head Socket Cap Screw
3	B160411	8-32 x 1/4 Socket Head Cap Screw
4	B190611	10-24 x 3/8 Socket Head Cap Screw
5	B190831	10-24 x 1/2 Socket Head Cap Screw
6	C370820	3/8-16 x 1/2 Cup Point Set Screw
7	J502000	1/2-13 Hex Jam Nut
8	J507100	1/2-13 Locknut Full Nylon
9	K161501	#8 Lockwasher Split
10	K191501	#10 Lockwasher Split
11	09068	Washer Conical .50 x 1.25 x .078T
12	09299	1/2-13 x 2.5 Lg Button Head Socket Cap Screw
13	09707	Digital Scale, 6" Mitutoyo #572
14	50095	Mounting Block
15	50283	Gage Mounting Bracket
16	55472	Handwheel 1/2-13 ID
17	50325	Arm Support Pivot
18	50348	Vertical Adjustment Shaft
19	50573	Vertical Adjuster Assembly
20	50591	Cap Assembly
21	80344	Hex Acorn Nut 1/2-13
22	3709042	Ball Bearing Thrust Nice #603-1/4
23	7469149	Nylon Plug 5/16 Diameter

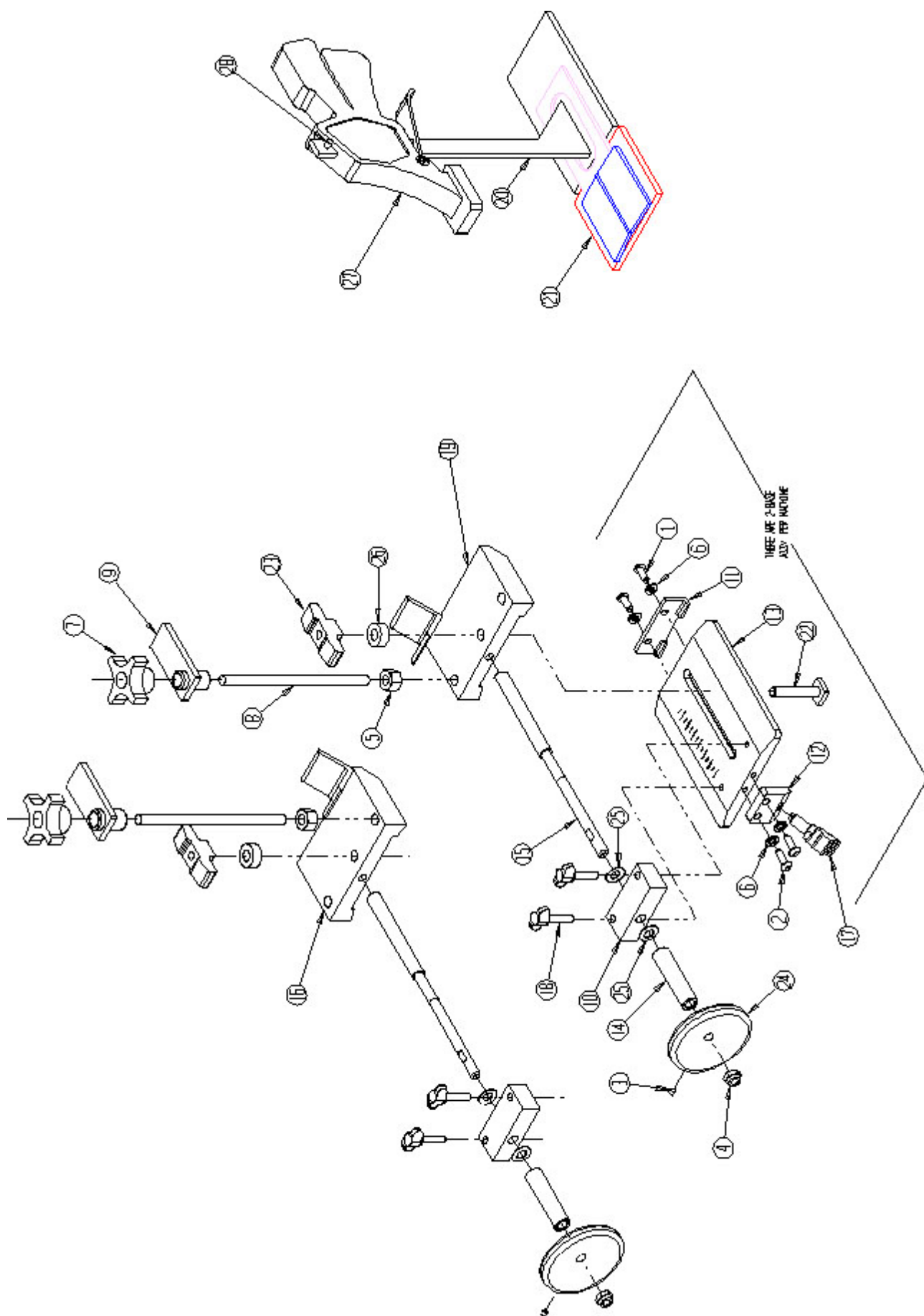
EXPLODED VIEW: 55563 TRAVERSE DRIVE ASSEMBLY



PARTS LIST: 55563 TRAVERSE DRIVE ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B251011	1/4-20 X 5/8 Socket Head Cap Screw
2	B257211	1/4-20 x 4.5 Socket Head Cap Screw
3	J257000	1/4-20 Locknut Thin
4	K250001	Flat Washer 1/4
5	K251501	1/4 Lockwasher Split
6	50309	Traverse Pulley Shaft
7	50354	Cog Pulley Drive
8	6059062	Motor Assembly Trav W16
9	50363	Traverse Pulley Guard
10	55553	Cog Pulley Driven .375 P .50W
11	80353	Die Spring .34 ID x 2.0 Lg
12	80354	Cog Belt
13	80355	Thrust Washer .75 ID x 1.25 OD
14	3709331	Retaining Ring
15	C250460	1/4-28 x 1/4 Socket Head Set Screw
16	80126	3/16 SQ x 1.00 Key

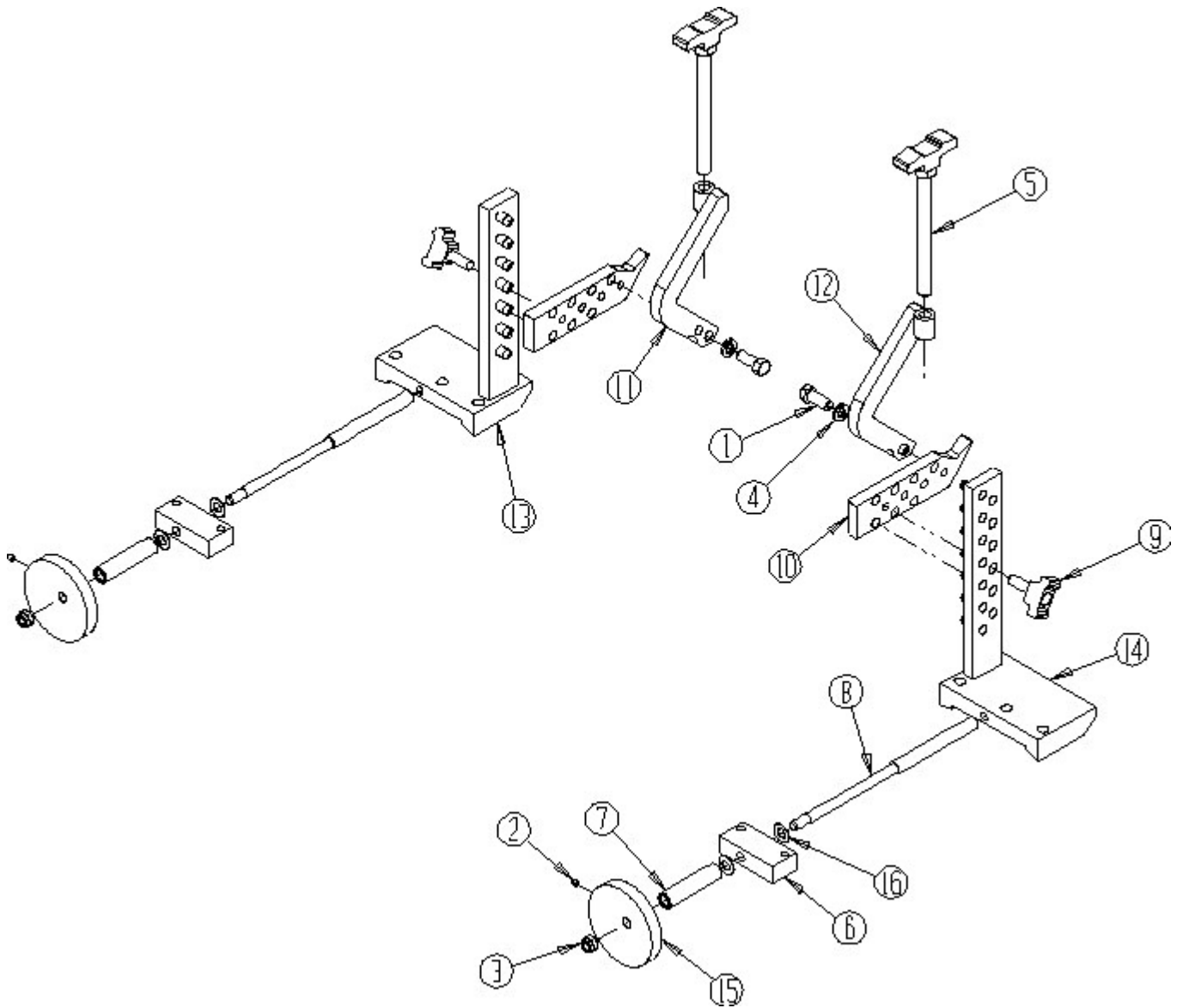
EXPLODED VIEW: 55452 MOWER SUPPORT ASSEMBLY



PARTS LIST: 55452 MOWER SUPPORT ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B251016	1/4-20 X 5/8 Button Head Cap Screw
2	B251216	1/4-20 x 3/4 Button Head Cap Screw
3	C250420	1/4-20 x 1/4 Cup Point Set Screw
4	J377000	3/8-16 Locknut Jam Nylon
5	J502000	1/2-13 Hex Jam Nut
6	K251501	1/4 Lockwasher Split
7	09853	Knob 4 prong 1/2-13 F
8	17119	Threaded Stud 1/2-13 x 65 Lg
9	50242	Roller Clamp Weldment
10	50288	Tooling Block Adjustment
11	50290	Front Clamp Plate
12	50291	Clamp Block
13	55449	Tooling Base Plate
14	55376	Tooling Spacer
15	55374	Acme Shaft L.H. Tooling
16	50568	V Roller Weldment L.H.
17	50570	T-Knob Assembly 3/8-16 x .75 Dog Point
18	80396	Knob Assembly 1/4-20 x 1.0 Lg
19	55506	V Roller Weldment R.H.
20	50584	Rear Roller Clamp Weldment
21	70512	Roller Roller Bracket Weldment
22	80346	Bolt T Slot 3/8-16 x 2.0 Lg
23	3708245	Knob T 235 3/8-16 F
24	3708393	Handwheel 3.50 Diameter
25	3709062	Conical Washer .382 x .75 x .035 T
26	3889045	Spacer .406 ID x .88 OD x .38Long
27	80347	Quick Clamp Handle
28	H251002	Roll Pin .25 Dia. x 5/8 Long

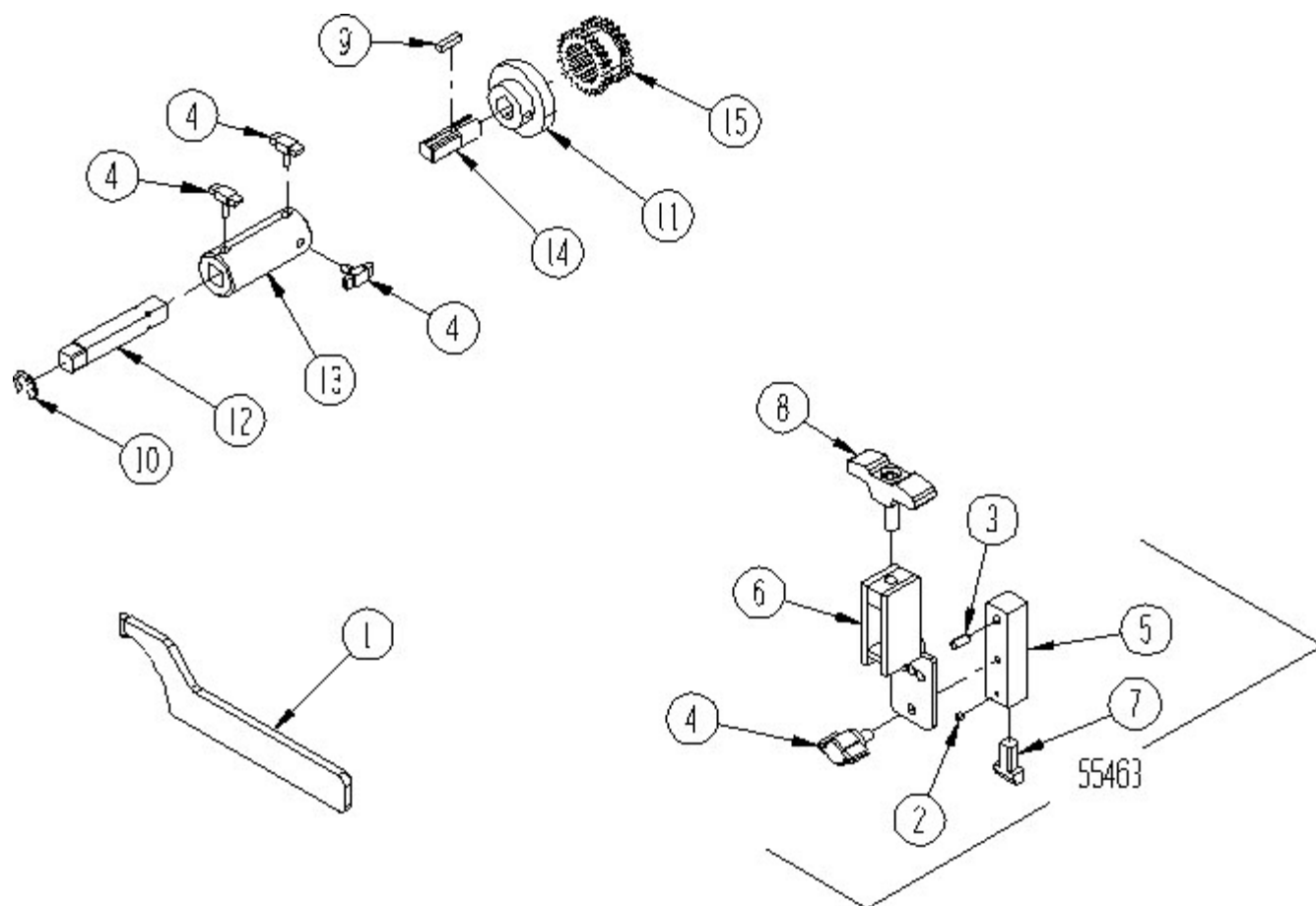
EXPLODED VIEW: 55460 VERTICAL MOWER SUPPORT ASSEMBLY



PARTS LIST: 55460 VERTICAL MOWER SUPPORT ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B371601	3/8-16 X 1 Hex Head Cap Screw
2	C250420	1/4-20 x 1/4 Cup Point Cap Screw
3	J377000	3/8-16 Locknut Jam Nylon
4	K371501	3/8 Lockwasher Split
5	17519	Knob T Assembly 1/2-13 x 6.5"
6	50288	Tooling Block Adjustment
7	55376	Tooling Spacer
8	55374	Acme Shaft L.H. Tooling
9	50592	Knob T 3/8-16 x 1.0 Lg
10	55282	Hanger "V"
11	55343	Clamp Weldment Large L.H.
12	55358	Clamp Weldment Large R.H.
13	55511	Tooling Post Assembly L.H.
14	55512	Tooling Post Assembly R.H.
15	3708393	Handwheel 3.50 Dia.
16	3709062	Conical Washer .382 Id x .75 OD x .035 Thick

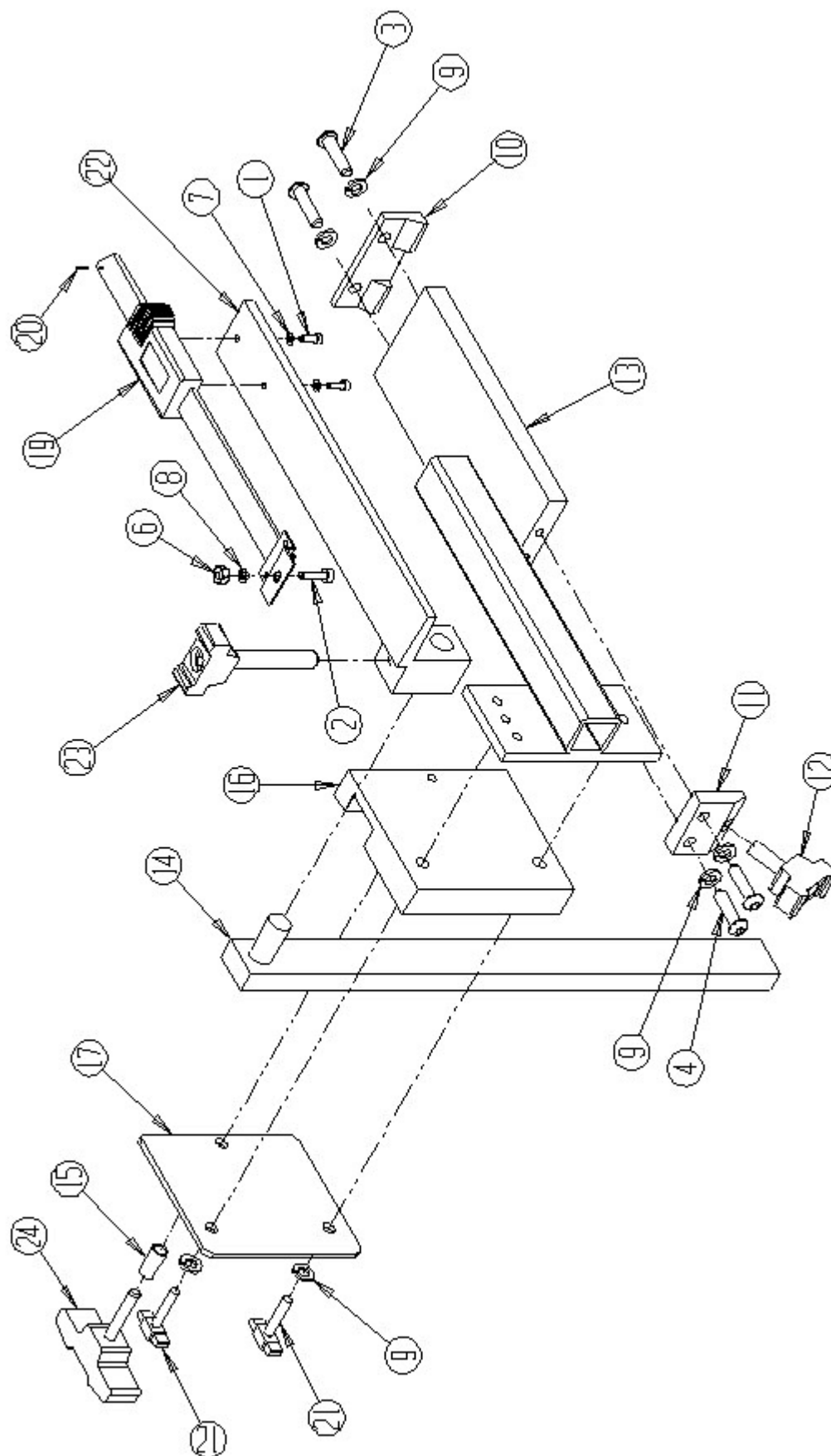
EXPLODED VIEW: 55454 CARTON ASSEMBLY



PARTS LIST: 55454 CARTON ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	50014	Spanner Wrench
2	C190320	#10-24 x 3/16 Socket Head Setscrew
3	H250802	1/4" x 1/2" Roll Pin
4	09394	1/4-20 2-prong Knob
5	55122	Dresser Support Block
6	55461	Dresser Support Weldment
7	3708845	3/4 Wide x 1/4 Thick Diamond Dresser
8	6509588	T-Knob Assembly
9	R000377	Sq Key 3/16 x .75
10	3709073	Retaining Ring
11	3709584	Flange Coupler .625 Bore
12	6009051	Drive Adapter 1/2 sq 3.5 Lg
13	6009052	Adapter
14	6009217	Driver Coupler Adapter
15	3709585	Sleeve Coupler

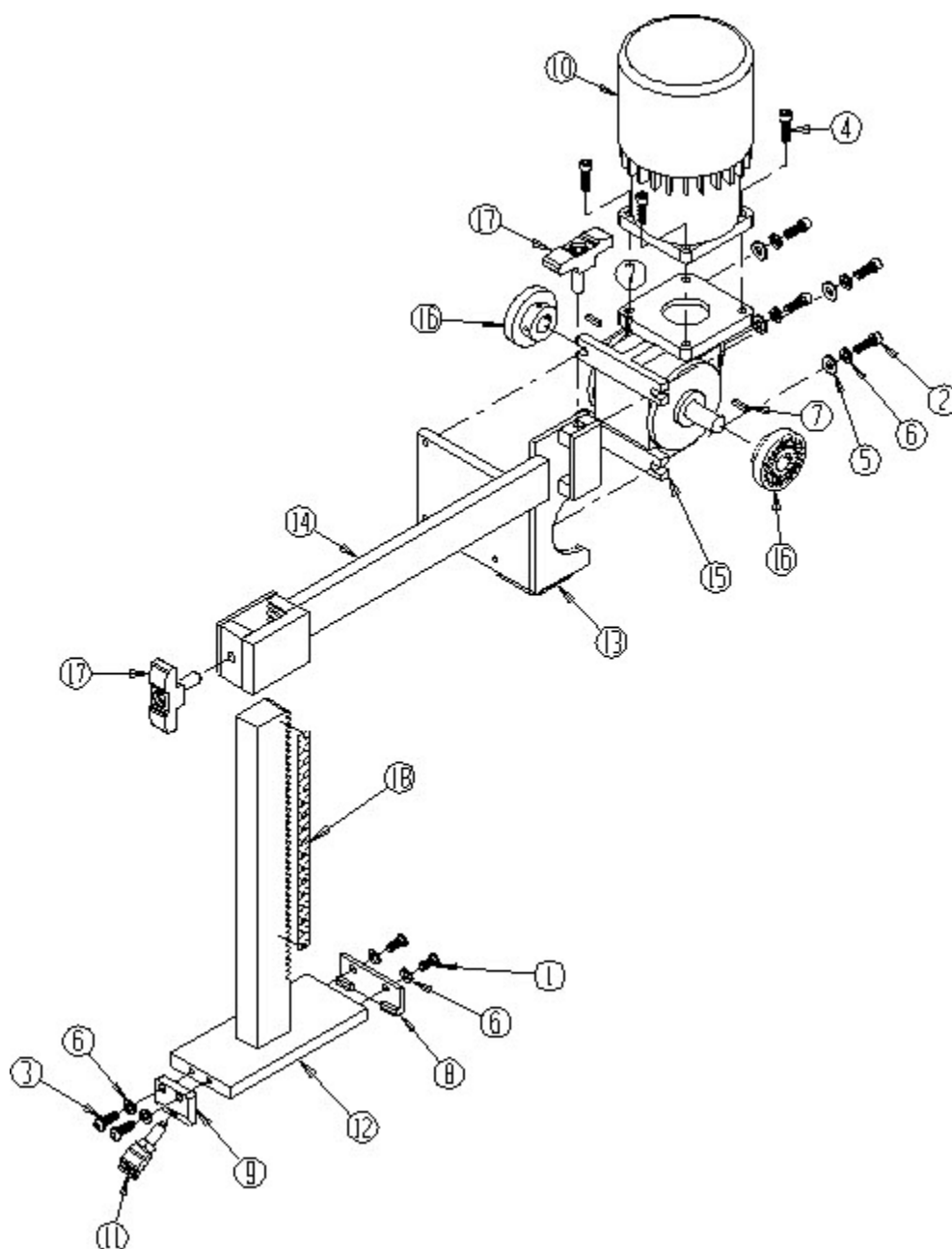
EXPLODED VIEW: 55571 ALIGNMENT GAGE ASSEMBLY



PARTS LIST: 55571 ALIGNMENT GAGE ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B120611	5-40 x .38 Socket Head Cap Screw
2	B161011	8-32 x 5/8 Socket Head Cap Screw
3	B251016	1/4-20 x 5/8 Button Head Socket Cap Screw
4	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
5	B252001	1/4-20 x 1-1/4 Hex Head Cap Screw
6	J161000	8-32 Hex nut
7	K121501	#5 Lockwasher Split
8	K161501	#8 Lockwasher Split
9	K251501	1/4 Lockwasher Split
10	50290	Front Clamp Plate
11	50291	Clamp Block
12	50570	T-Knob Assembly 3/8-16 x .75 Dog Point
13	50586	Gage Base Weldment
14	50597	Gage Bar Assembly Vertical
15	3529069	Spacer .25 ID x .375 OD x .69 Long
16	6509418	Pivot Plate Machined
17	6509349	Retainer Plate
19	6509359	Digital Gage Machined
20	H060302	Roll Pin .063 D x .188 Long
21	80396	Knob T 1/4-20 x 1.18 Long
22	6509412	Indicator Base Weldment
23	6509567	Knob Assembly T 1.5 3/8-16 x 2.25 Long
24	6609501	Knob Assembly T 1/4-20 x 1.31 Long

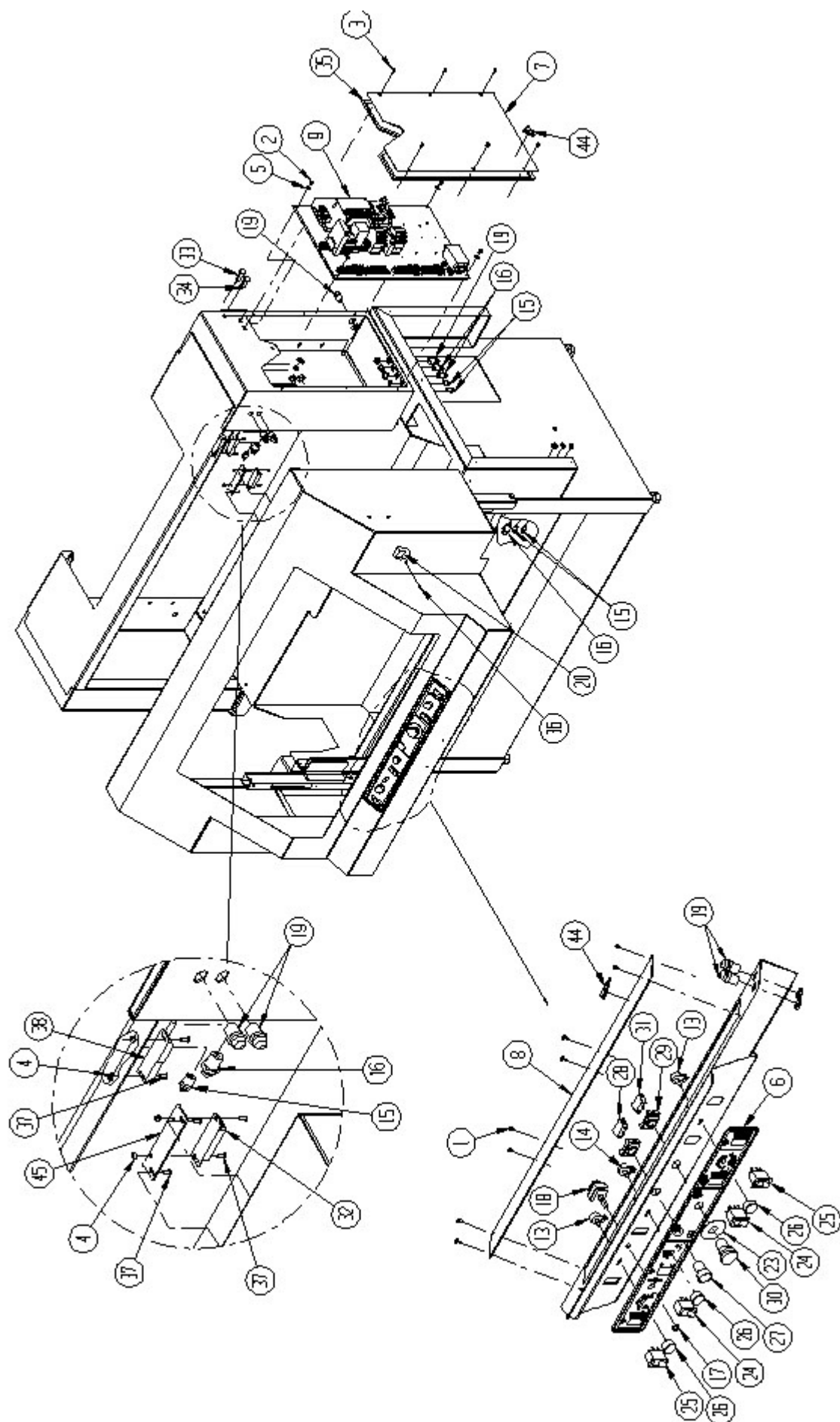
EXPLODED VIEW: 55456 SPIN DRIVE ASSEMBLY



PARTS LIST: 55456 SPIN DRIVE ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	B251016	1/4-20 x 5/8 Button Head Socket Cap Screw
2	B251211	1/4-20 x 3/4 Socket Head Cap Screw
3	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
4	B251411	1/4-20 x 7/8 Socket Head Cap Screw
5	K250001	Flat Washer 1/4
6	K251501	1/4 Lockwasher Split
7	R000376	Sq Key 1/8 x .75
8	50290	Front Clamp Plate
9	50291	Clamp Block
10	55151	Motor Spin Assembly Spin W13
11	50570	T-Knob Assembly 3/8-16 x .75 Dog Point
12	50585	Spin Mount Weldment Vertical
13	55437	Spin Mount Weldment
14	55442	Spin Arm Weldment Horizontal
15	3708391	Reducer 10:1 Ratio
16	3709586	Flange Coupler .50 Bore
17	6509588	Knob Assembly T 2.5 3/8-16 x 1.00L
18	6329072	Decal - Scale
19	3707623	DC Motor Brush (Not Shown)

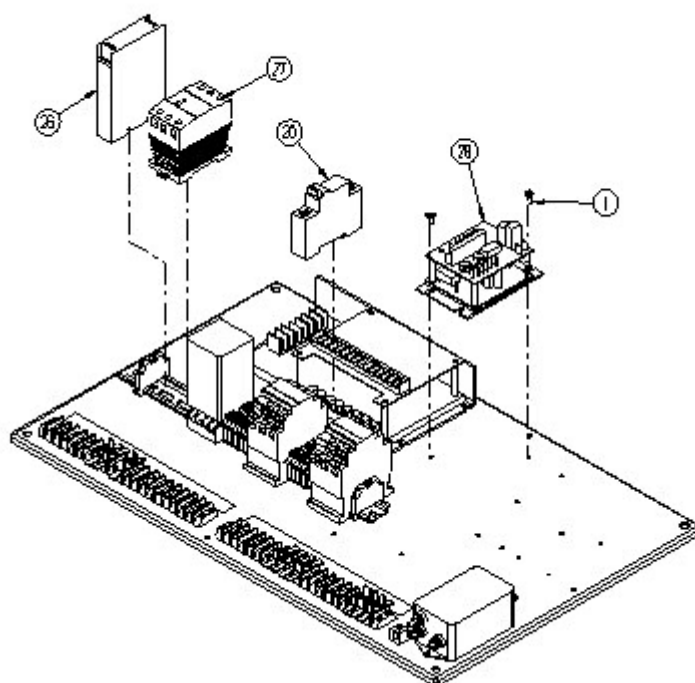
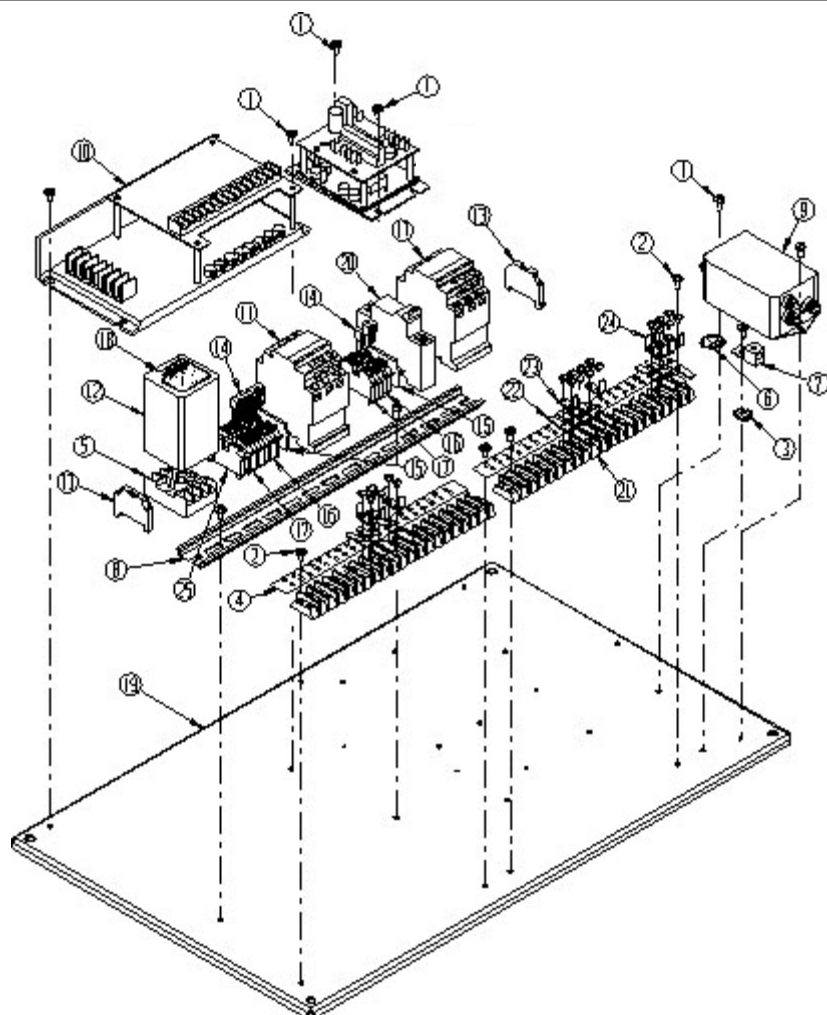
EXPLODED VIEW: 55457 CONTROLS ASSEMBLY



PARTS LIST: 55457 CONTROLS ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	D160608	Thrd Cutting Screw 8-32 x 3/8 "F Type"
2	D250800	Thrd Cutting Screw 1/4-20 x 1/2 "F Type" Hex Hd
3	D250808	Thrd Cutting Screw 1/4-20 x 1/2 "F Type" Pan Hd
4	J167000	8-32 Nylon Insert Lock Nut Jam
5	R000536	Lockwasher 1/4" Internal Teeth
6	55373	Control Panel Decal
7	55413	Electrical Cover Panel
8	55422	Control Service Panel
9	55455	Control Panel Sub-Assembly (See Page 74-75)
10	55458	Control Panel Cord (Not Shown)
11	55459	Potentiometer Cord (Not Shown)
12	55474	Wire Harness - 555 (Not Shown)
13	80419	Potentiometer Assembly - 10K
14	80420	Potentiometer Assembly - 50K
15	3707009	Strain Relief - Liquid Tight .27-.47 Wire Dia.
16	3707029	Strain Relief - Liquid Tight .19-.30 Wire Dia.
17	3707075	Toggle Switch Boot
18	3707080	Toggle Switch
19	3707658	Strain Relief - Liquid Tight .55-.71 Wire Dia.
20	3707224	Cable Tie Mount
21	3707225	Cable Tie - 6.5 Long x .18 Wide (Not Shown)
22	3707255	Cable Tie - 4.0 Long x .10 Wide (Not Shown)
23	3707342	Yellow E-Stop Ring
24	3707367	Rocker Switch
25	3707429	Rocker Switch
26	3707446	Potentiometer Knob
27	3707564	Green Pushbutton
28	3707565	Contact Block - Normally Open
29	3707566	Switch Mounting Latch
30	3707567	Red Stop Push/Pull Pushbutton
31	3707568	Contact Block - Normally Closed
32	3707647	Door Safety Coded Magnet
33	3707549	Circuit Breaker - 20 Amp
34	3707653	Circuit Breaker - 4 Amp
35	3708378	Foam Strip - .25 Thick {Sold by the foot}
36	3708675	Blind Rivet .188 Dia.
37	3708820	8-32 x .50 Button Head Safety Screw
38	6059040	Door Safety Switch Assembly - Front
39	6059093	Light Receptacle Cord (Not Shown)
40	6329065	Traverse Proximity Switch - Left Hand (Not Shown)
41	6329066	Traverse Proximity Switch - Right Hand (Not Shown)
42	6329391	Main Power Cord (Not Shown)
43	6509391	Power Cord Warning Tag (Not Shown)
44	3708448	Electrical Warning Decal
45	55476	Door Switch Bracket

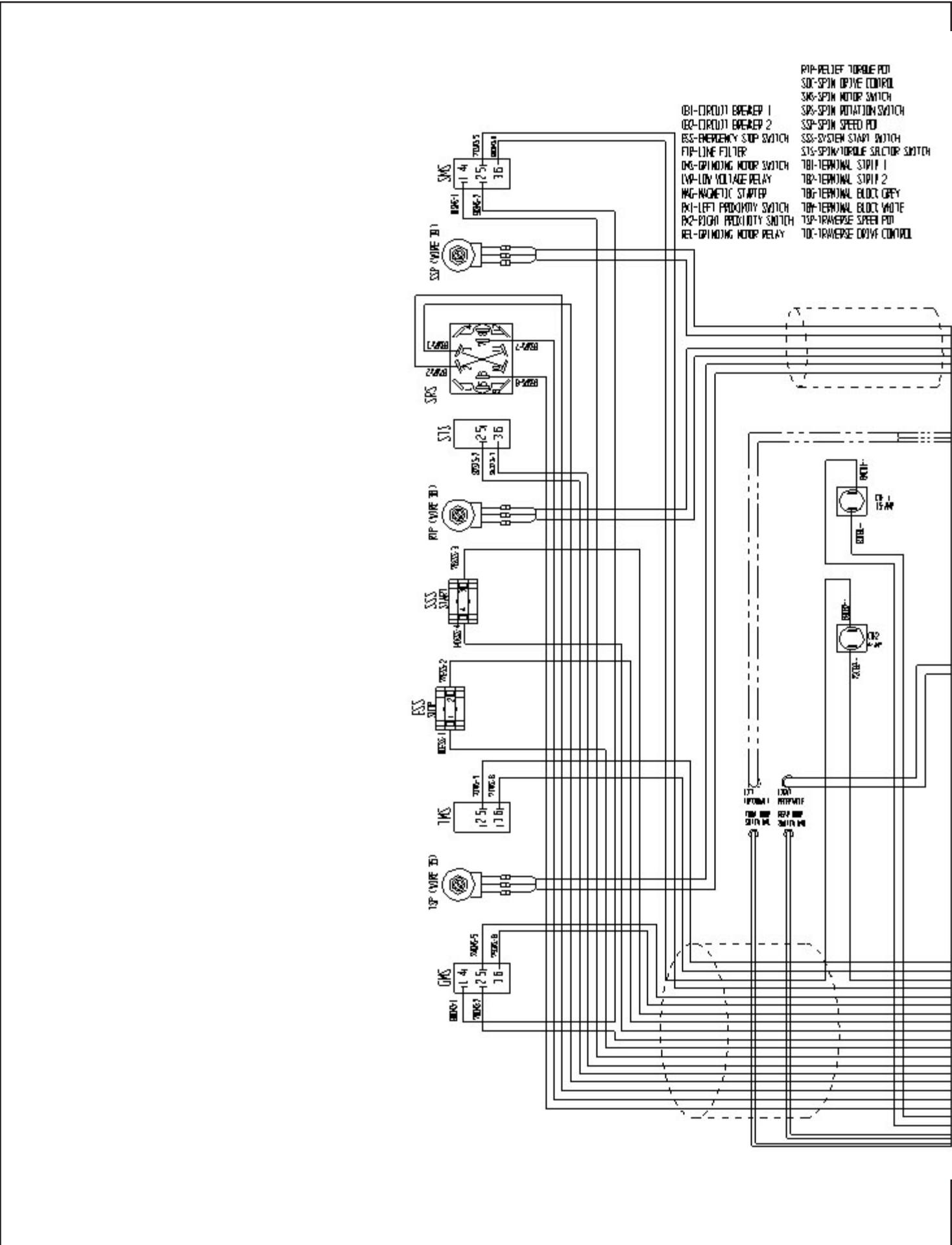
EXPLODED VIEW: 55455 ELECTRIC PANEL SUB ASSEMBLY



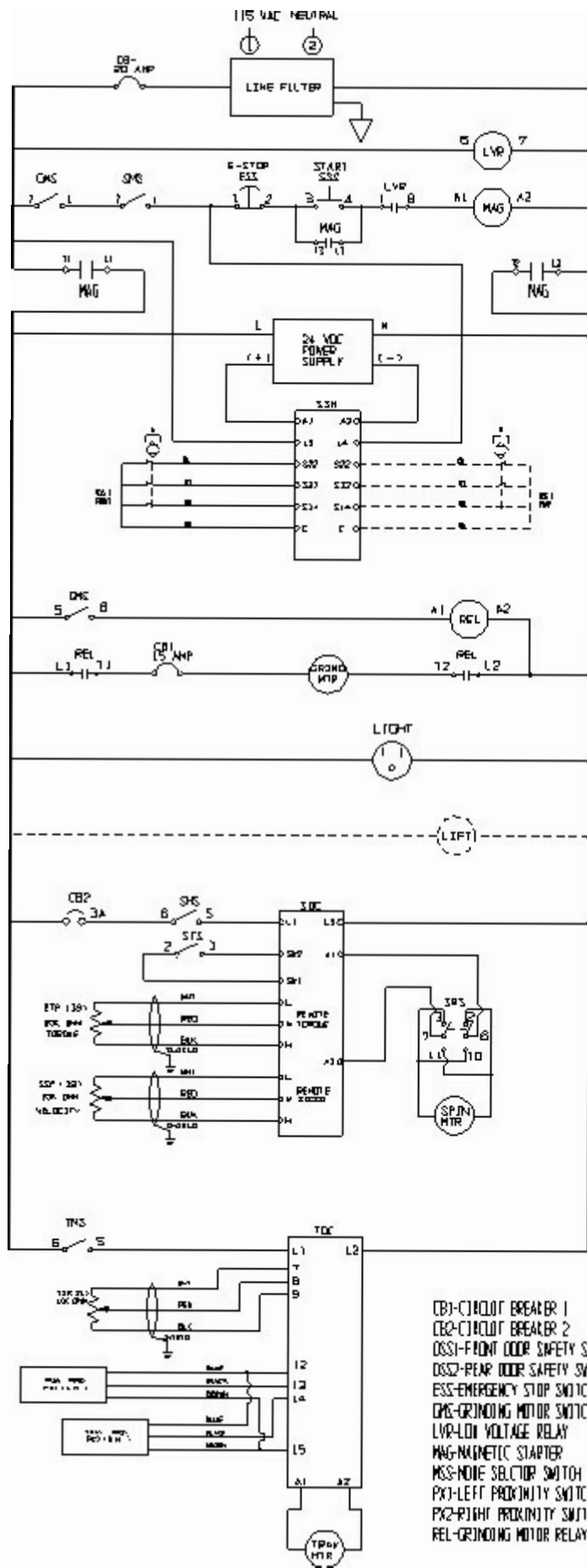
PARTS LIST: 55455 ELECTRIC PANEL SUB ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	D160666	No. 8 x 3/8 Pan Head Self Tapping Screw
2	D161266	No. 8 x 3/4 Pan Head Self Tapping Screw
3	R000480	Lockwasher No. 8 External Teeth
4	55223	Terminal Strip Decal
5	3707073	8 Pin Socket
6	3707163	Primary Ground Decal
7	3707164	Primary Ground Lug
8	3707378	Din Rail - 14" Long
9	3707654	Power Line Filter
10	3707550	Traverse Control Board
11	3707556	Magnetic Starter 1 HP
12	3707558	Voltage Sensor Relay
13	3707625	Terminal Block End Stop
14	3707626	Terminal Block Jumper
15	3707627	Terminal Block End Plate
16	3707628	2 Conductor Geey Terminal Block
17	3707629	2 Conductor Blue Terminal Block
18	3708826	Low Voltage Relay Warning Decal
19	6009270	Electrical Panel
20	80259	Circuit Breaker - 20 Amp
21	3707706	Terminal Strip - 2 Row 19 Pole
22	3707707	Terminal Strip Double Flat Spade
23	3707709	Terminal Strip Single 90° Spade
24	3707708	Terminal Strip Double 90° Spade
25	3707624	Ground Terminal Block
26	3707328	Door Safety Switch Monitor
27	3707333	Power Supply 24 VDC 0.3 Amp
28	3707524	Spin Control Board
29	3707224	Cable Tie Mount (Not Shown)
30	3707225	Cable Tie 6.5" x .18 Wide (Not Shown)
31	3707615	Wire Harness - Common (Not Shown)
32	3707656	Wire Assembly W99 (Not Shown)
33	18091	Wire Assembly (Not Shown)
34	3707616	Wire Harness - Spin Drive (Not Shown)
35	3707617	Wire Harness - Safety Monitor (Not Shown)
36	3707631	Terminal Block Tag 1-10 (Not Shown)
37	3707632	Terminal Block Tag 11-20 (Not Shown)

WIRING DIAGRAM 55455-1







CB1-CIRCUIT BREAKER 1
 CB2-CIRCUIT BREAKER 2
 SS1-FRONT DOOR SAFETY SWITCH
 SS2-REAR DOOR SAFETY SWITCH
 ESS-EMERGENCY STOP SWITCH
 GMS-GRINDING MOTOR SWITCH
 LVR-LOW VOLTAGE RELAY
 MAG-MAGNETIC STARTER
 MSS-MODE SELECTOR SWITCH
 PX1-LEFT PROXIMITY SWITCH
 PX2-RIGHT PROXIMITY SWITCH
 REL-GRINDING MOTOR RELAY

RTP-RELIEF TORQUE POT
 SDC-SPIN DRIVE CONTROL
 SMS-SPIN MOTOR SWITCH
 SRS-SPIN ROTATION SWITCH
 SSH-SAFETY SWITCH MONITOR
 SSP-SPIN SPEED POT
 SSS-SYSTEM START SWITCH
 STS-SPIN/TORQUE SELECTOR SWITCH
 TMS-TRANSVERSE MOTOR SWITCH
 TSP-TRANSVERSE SPEED POT
 TOD-TRANSVERSE DRIVE CONTROL